Whirlpool®

TECHNICAL MANUAL

Whirlpool 27” Front Load Washer

W11744594

FOREWORD

This Technical Manual (Part No. W11744594), provides the In-Home Service Professional with service information for the “Whirlpool® 27 Inch Top Load Washer”.

The Wiring Diagram used in this Technical Manual is typical and should be used for training purposes only. Always use the Wiring Diagram supplied with the product when servicing the appliance.

For specific operating and installation information on the model being serviced, refer to the “Use and Care Guide” or “Installation Instructions” provided with the appliance.

GOALS AND OBJECTIVES

The goal of this Technical Manual is to provide information that will enable the In-Home Service Professional to properly diagnose malfunctions and repair the “Whirlpool® 27 Inch Top Load Washer.”

The objectives of this Technical Manual are to:

- Understand and follow proper safety precautions.
- Successfully troubleshoot and diagnose malfunctions.
- Successfully perform necessary repairs.

WHIRLPOOL CORPORATION assumes no responsibility for any repairs made on our products by anyone other than authorized In-Home Service Professionals.

Written and developed by the Technical Content Service team in Benton Harbor, Michigan, USA.

Contents

COMPONENT ACCESS

This section provides service parts access, removal and component locations for the “Whirlpool 27” Front Load Washer.” Refer to the Repair Parts List for your specific model to see what parts are available for ordering. Access may be shown to some assemblies that can be disassembled further.

MODEL AND SERIAL NUMBER LOCATION

TECH SHEET LOCATION

REMOVE TOP PANEL

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Use either 1/4” Hex-head or TORX®† T20® screwdriver to remove three (3) screws securing top panel to washer.
5. Lift up rear part of top panel and slide it back to remove.
6. Follow reverse order of removal to reinstall top panel.

REMOVE REAR PANEL

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

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Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Use either 1/4” Hex-head or TORX®† T20® screwdriver to remove twelve (12) screws securing rear panel to washer.

5. Lift up rear panel and remove it from washer.
6. Follow reverse order of removal to reinstall rear panel.

REMOVE WATER LEVEL SWITCH

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

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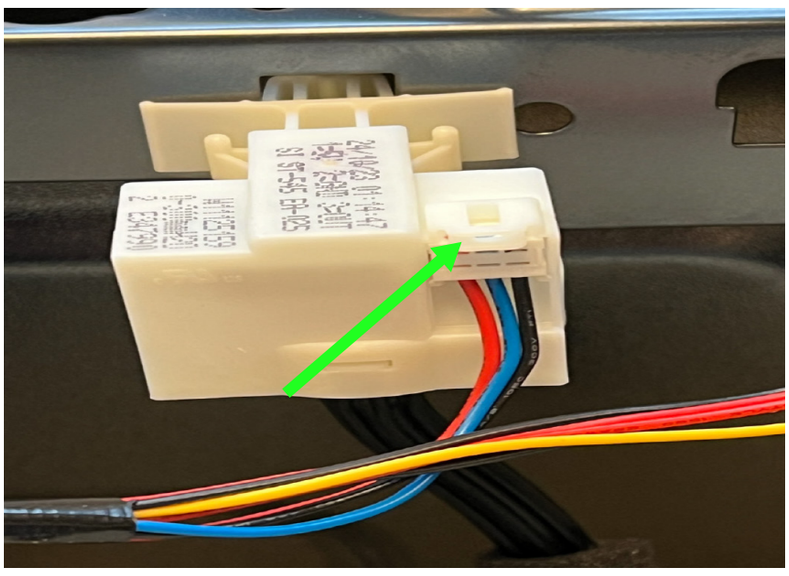
Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from the standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.

NOTE: Water level switch is located on right panel towards front.

5. Push clip of harness connector to disconnect water level switch harness.



6. Twist Water Level Switch 90° to remove from side panel.
7. Remove hose from pressure switch.
8. Follow reverse order of removal to reinstall water level switch.

REMOVE RFI FILTER

⚠WARNING

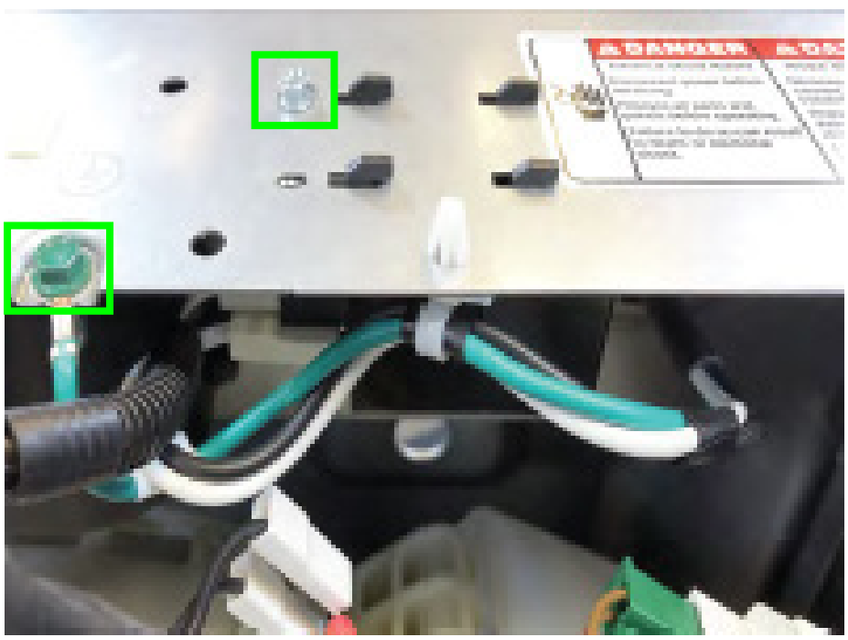
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Use 1/4” Hex-head screwdriver to remove green ground screw.
6. Use 1/4” Hex-head screwdriver to remove screw securing RFI filter to rear bracket.



7. Unclip harness clip then slide RFI Filter to disengage tabs from top of rear bracket.
8. Remove RFI filter.
9. After removal of filter, disconnect two (2) AC input terminals and one AC output connector.
10. Follow reverse order of removal to reinstall RFI filter.

REMOVE FAN ASSEMBLY

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

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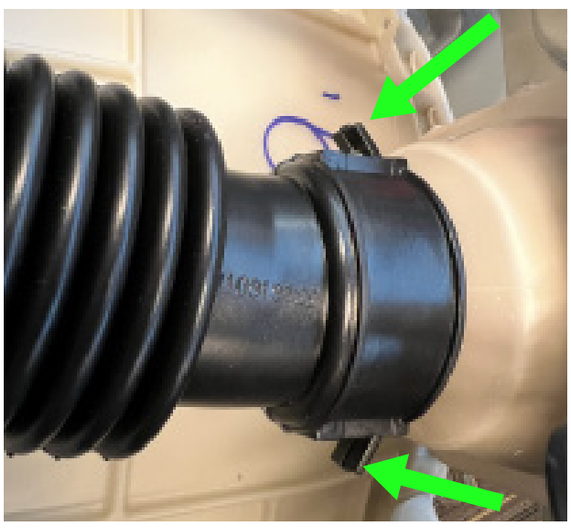
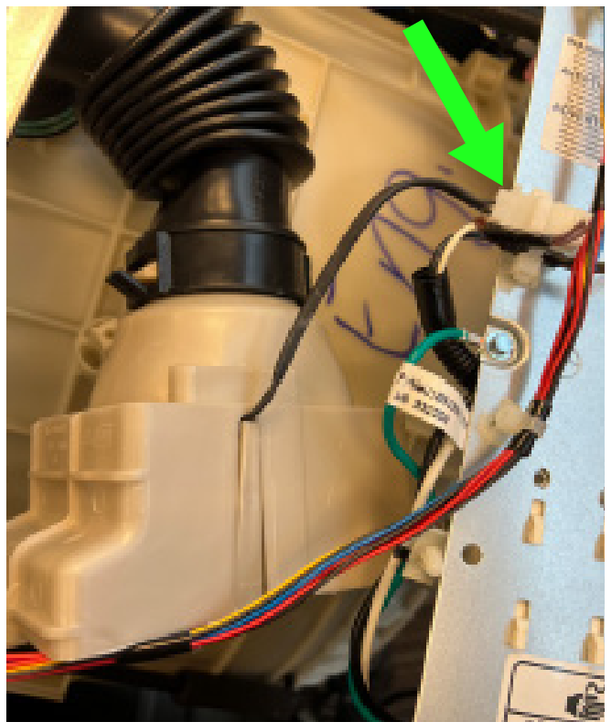
Failure to do so can result in death or electrical shock.

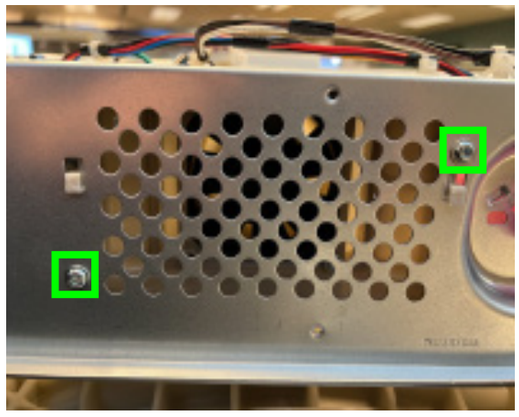
1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Disconnect tub hose from fan enclosure.



6. Disconnect fan connector.



7. Use TORX®† T20® screwdriver to remove two (2) screws securing fan to rear bracket.



8. Lift up fan enclosure to disengage two (2) tabs from rear bracket. Remove enclosure from washer.
9. Follow reverse order of removal to reinstall fan assembly.

REMOVE WATER INLET VALVES

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

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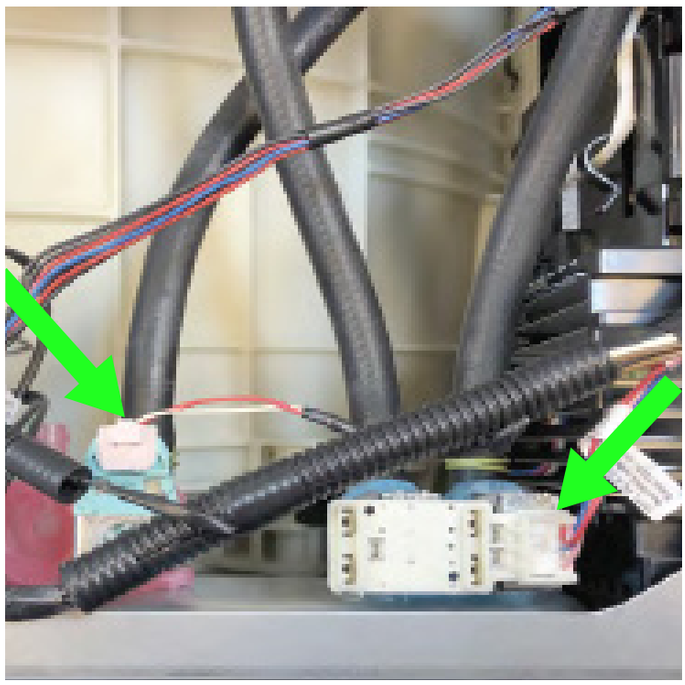
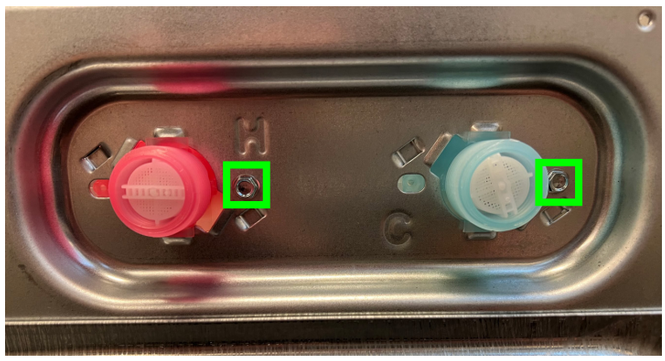
Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Disconnect water inlet valve connector(s).



6. Use 1/4” nut driver to remove screw(s) securing the valve(s) to rear bracket.



7. Rotate water valve(s) approximately 45° counter clockwise to disengage valve(s) from rear bracket. Push valve(s) into cabinet.
8. Slide water valve hose clamps away from valve assembly.
9. Remove hose(s) from valve(s).

REMOVE APPLIANCE CONTROL UNIT (ACU)

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

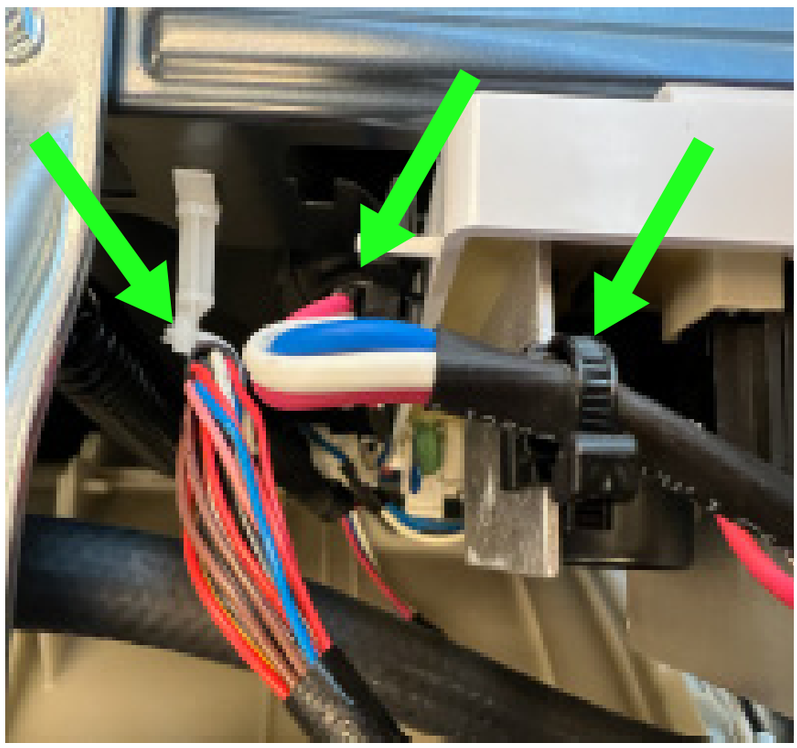
Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

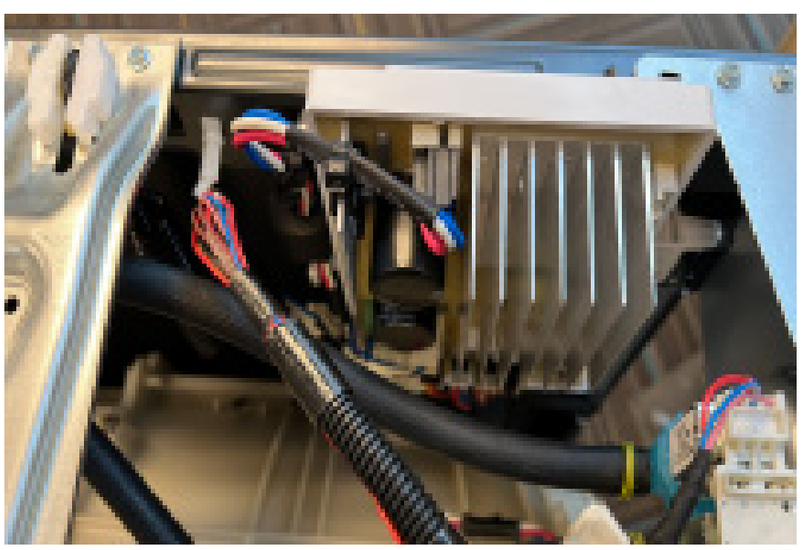
IMPORTANT: Electrostatic Discharge Sensitive Device (ESD). Failure to follow ESD precautions, may destroy, damage, or weaken the ACU.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from the standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.

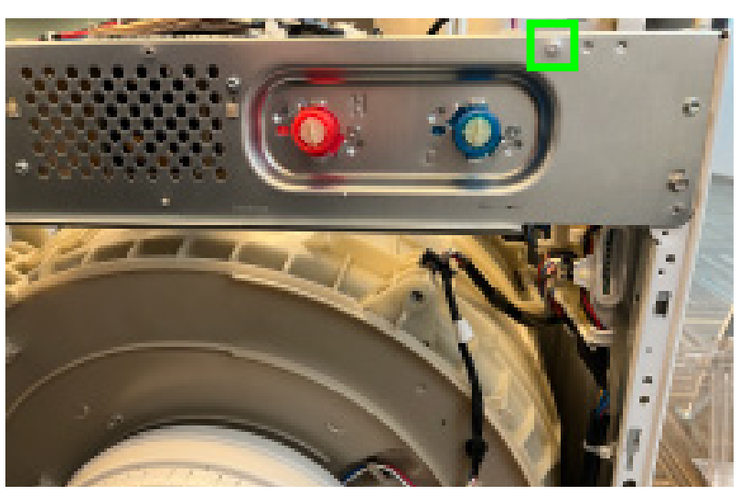
5. Remove three (3) harness clips.



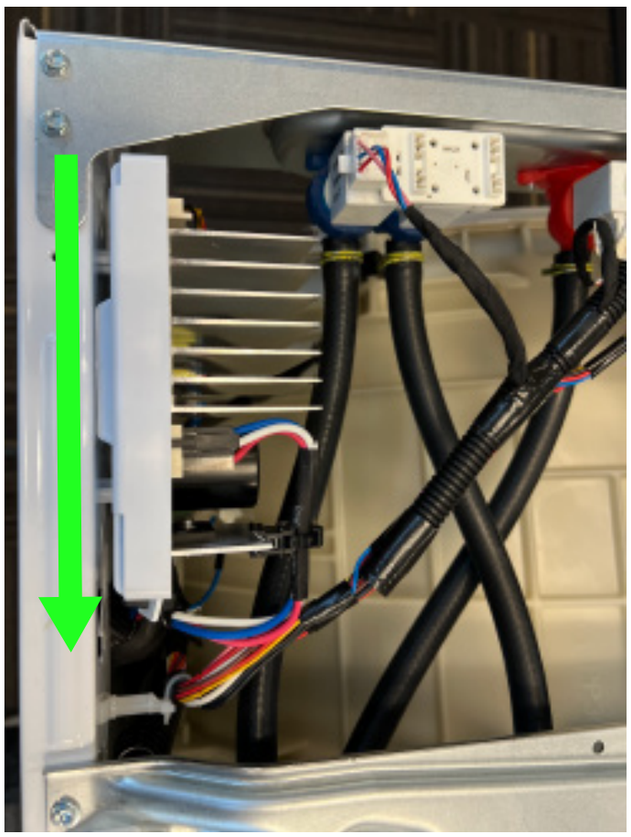
6. Disconnect all connectors from ACU.



7. Use 5/16” nut driver to remove ACU retainer screw from rear left panel.



8. Slide the ACU forward to disengage tabs from left panel then remove it from washer.



9. Follow reverse order of removal to reinstall ACU.

REMOVE TOP REAR BRACKET

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

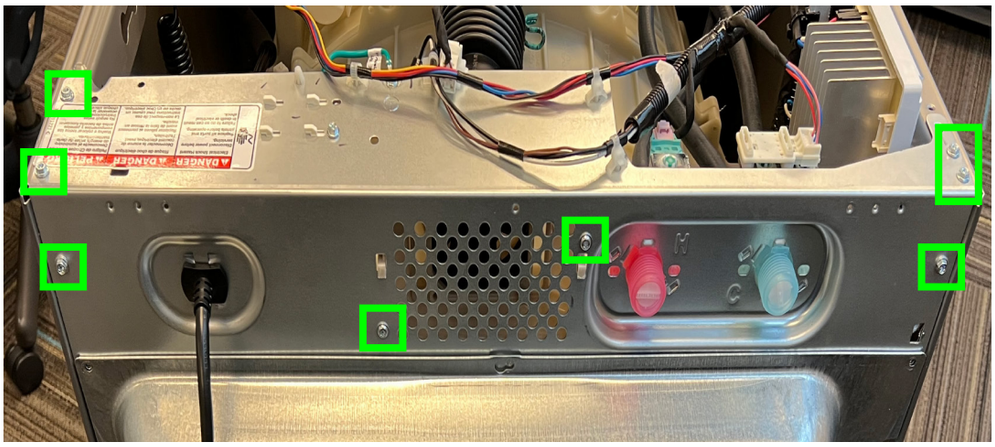
Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from the standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Complete steps 1-6 from Remove Rear Panel.

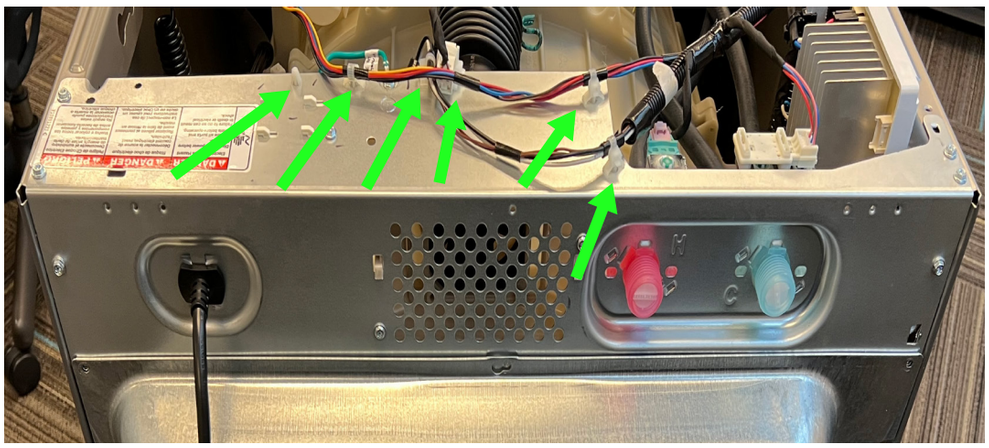
6. Complete steps 1-10 from Remove RFI Filter.
7. Complete steps 1-9 from Remove Fan Assembly.
8. Complete steps 5-10 from Remove Water Inlet Valves.
9. Disconnect hot and cold water inlet valve harnesses.
10. Remove screws securing water inlet valves to rear bracket.
11. Rotate valves to disengage them from rear bracket and push them into cabinet.

IMPORTANT: To avoid damage to hose and other components, do not stress hose fittings on dispenser.

12. Use either 1/4” Hex-head or TORX®† T20® screwdriver, remove screws securing rear bracket to washer.



13. Use needle nose pliers to remove harness clips from rear bracket.



14. Remove rear bracket from washer.
15. Follow reverse order of removal to reinstall rear bracket.

REMOVE WASH HEATER / THERMISTOR ASSEMBLY

⚠WARNING

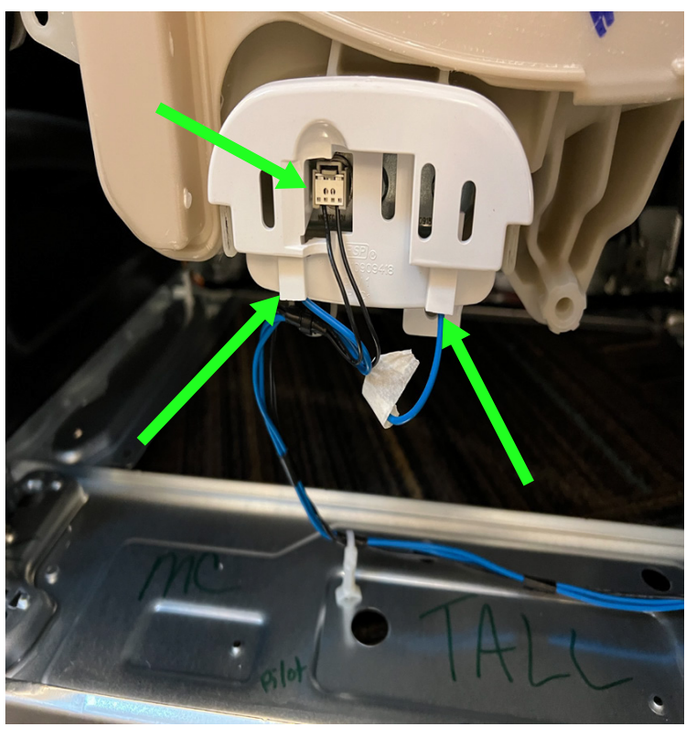
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from the standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Remove connector from wash NTC and two wire terminals from wash heater.



6. Remove the heater shield.
7. Using a 10 mm socket, loosen the compression nut (to the right of the NTC), but do not remove it completely.

8. Carefully pull the Heater/Thermistor Assembly from the tub.

IMPORTANT:

9. For reinstallation, make sure new heater is put underneath clamp that is fixed on bottom of tub.
10. Make sure heater is torqued down to 4.5 Nm ± 0.5 Nm.
11. Turn drum slowly after new heater has been installed, to make sure heater is not touching drum.
12. Run cycle for leak testing.

REMOVE DOOR ASSEMBLY

⚠WARNING

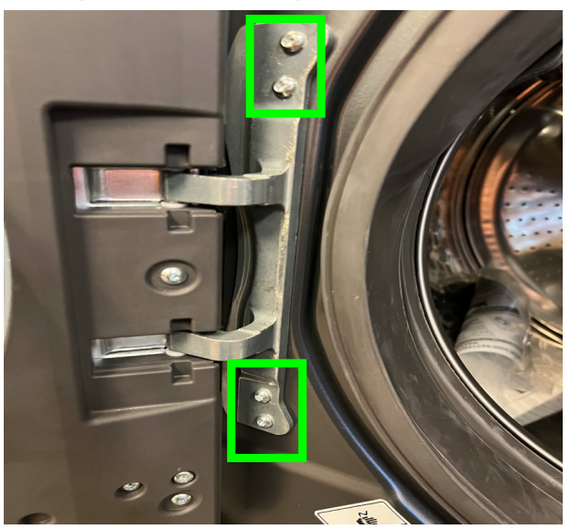
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Open washer door.
3. Use TORX®† T25® screwdriver to remove four (4) screws securing door hinge to front panel.



4. Lift up door assembly then remove it from washer.

REMOVE DOOR LOCK ASSEMBLY

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Open washer door.
3. Use small screwdriver or pair of long-nosed pliers to pull tension spring on retaining wire out from around front of bellows, and remove wire.
4. Remove bellows tension spring.
5. Fold back bellows on right side of door, next to door lock assembly.
6. Use TORX®† T20® screwdriver to remove two (2) screws securing door lock assembly to front panel.

7. Reach in through opening between front panel and bellows and pull out door lock assembly.

8. Disconnect door lock connector and remove door lock assembly from washer.
9. Follow reverse order of removal to reinstall door lock assembly.

REMOVE FRONT CONSOLE

⚠WARNING

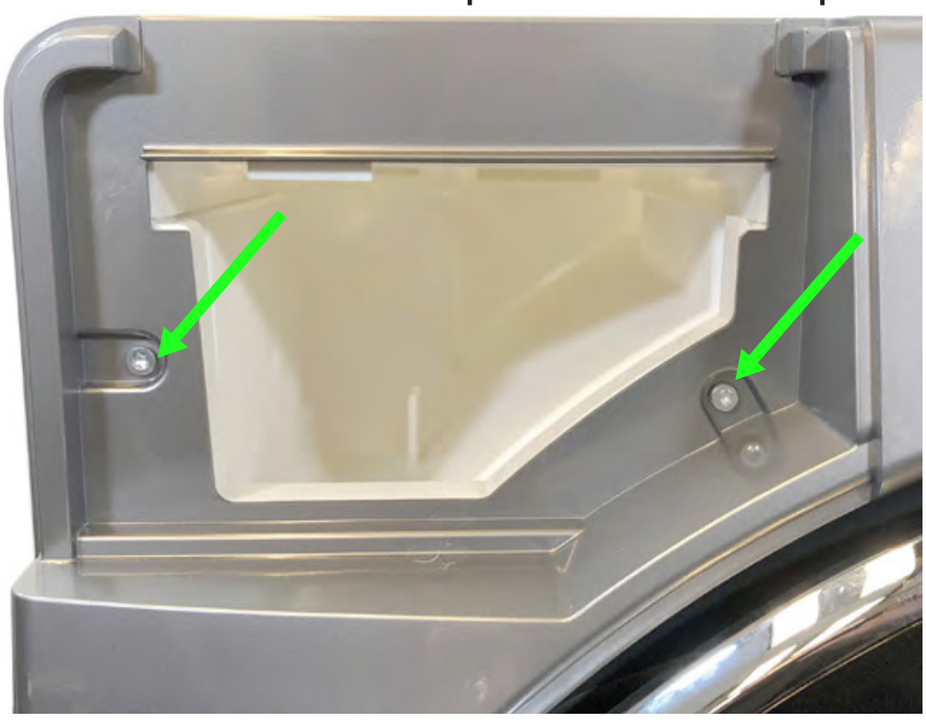
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from the standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Push tab to remove single dose dispenser drawer.
6. Use TORX®† T20® screwdriver to remove two (2) screws on both sides of dispenser drawer opening.



7. Use either 1/4” Hex-head or TORX®† T20® screwdriver, two (2) screws securing the Front Console to console bracket.
8. Lift up top edge of console to disengage four (4) console tabs then lift up and move it away from washer.

9. Follow reverse order of removal to reinstall front console to washer.

REMOVE FRONT PANEL

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

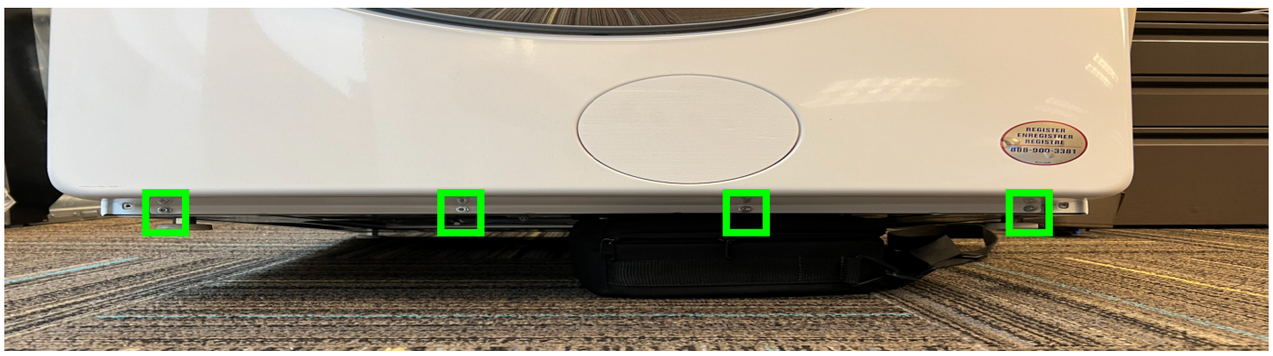
Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Complete steps 1-4 from Remove Door Assembly.
6. Complete steps 1-9 from Remove Front Console.
7. Use small screwdriver or pair of long-nosed pliers to pull

tension spring on retaining wire out from around front of bellows and remove wire. Detach bellows from front panel.

8. Use 1/4” nut driver to remove four (4) screws at bottom of front panel.



9. Use 5/16” nut driver to remove three (3) screws at top of front panel.

10. Lift up front panel and pull away from washer just enough to get access to door lock assembly.
11. Disconnect door lock assembly harness and remove front panel from washer.
12. Follow reverse order of removal to reinstall front panel to washer.

REMOVE SINGLE DOSE DISPENSER ASSEMBLY

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

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Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Use pliers to slide water inlet hose clamps away from dispenser assembly.
6. Remove three (3) hoses from single dose dispenser.

7. Complete steps 1-11 from Remove Front Panel.
8. Reach from front of washer. Slide Dispenser Assembly Hose Clamp away from dispenser.
9. Slide the Dispenser Assembly Hose off of the single dose dispenser.
10. Slide single dose dispenser assembly back to disengage tabs from left-side panel. Remove dispenser from washer.
11. Follow reverse order of removal to reinstall single dose dispenser assembly.

REMOVE DIRECT DRIVE MOTOR

⚠WARNING

Electrical Shock Hazard

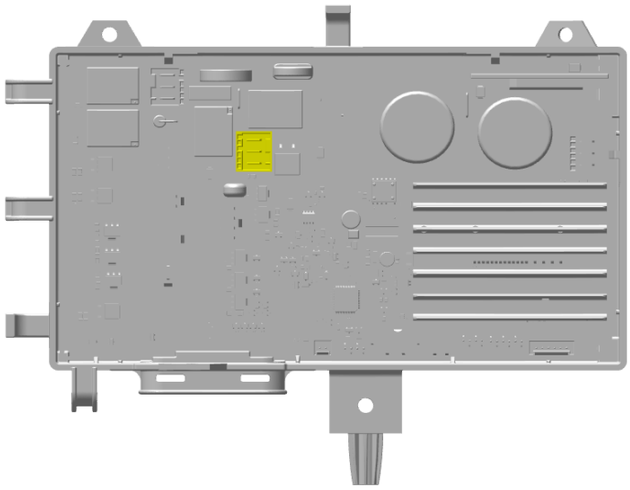
Disconnect power before servicing.

Replace all parts and panels before operating.

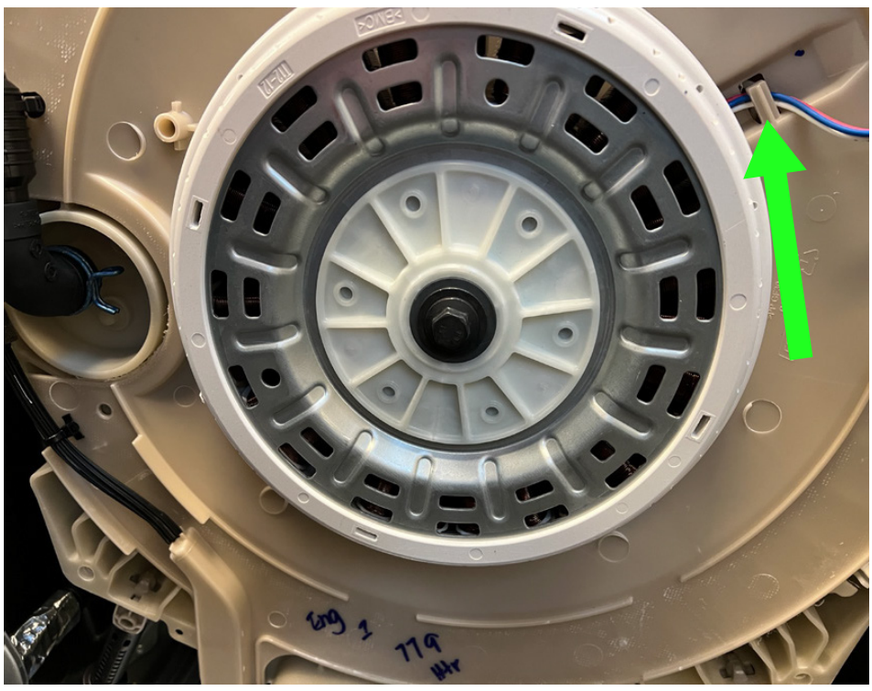
Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Complete steps 1-6 from Remove Rear Panel.

6. Disconnect motor connector harness from J3 on Appliance Control Unit (ACU).

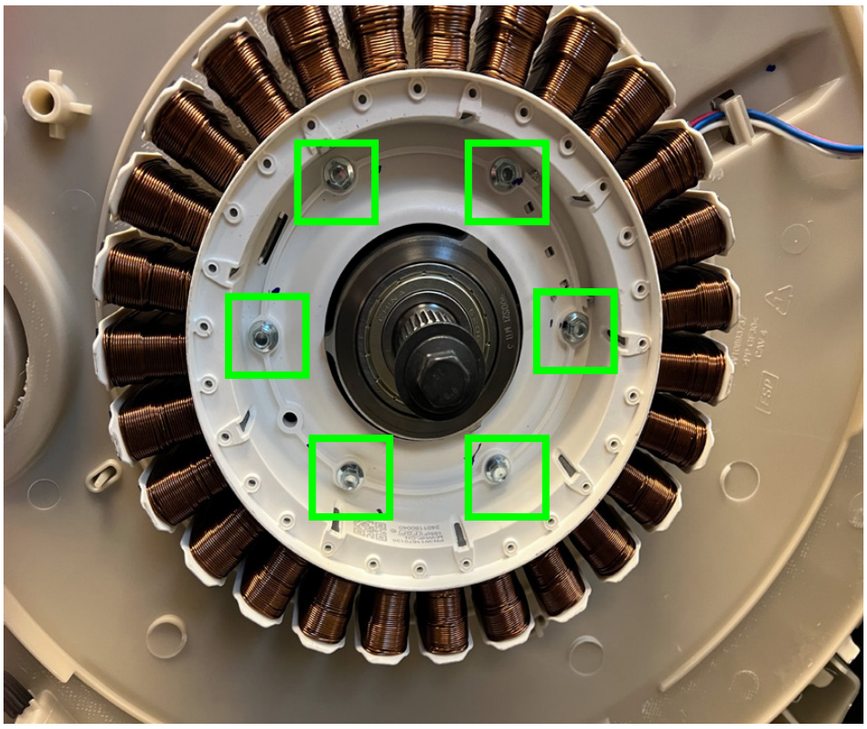


7. Use 5/8” socket wrench to remove rotor bolt, turn itcounterclockwise, and hold tub in place while removing it. May need to use breaker bar for more leverage.
8. Remove rotor from stator by pulling it backwards.
9. Remove all motor harness clips that securing the motor harness to drum or ACU.



10. Use TORX®† T30® socket to remove six (6) stator bolts.

11. Remove stator assembly.



IMPORTANT: Make sure to protect rotor and stator from dust or debris during removal and reinstallation. Debris on rotor or stator may damage motor during operation.

REMOVE RECIRCULATION HOSE

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

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Failure to do so can result in death or electrical shock.

1. Remove rear panel.
2. Locate Recirculation hose.
3. Squeeze hose clamp with pliers to remove hose.

REMOVE DRAIN PUMP

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

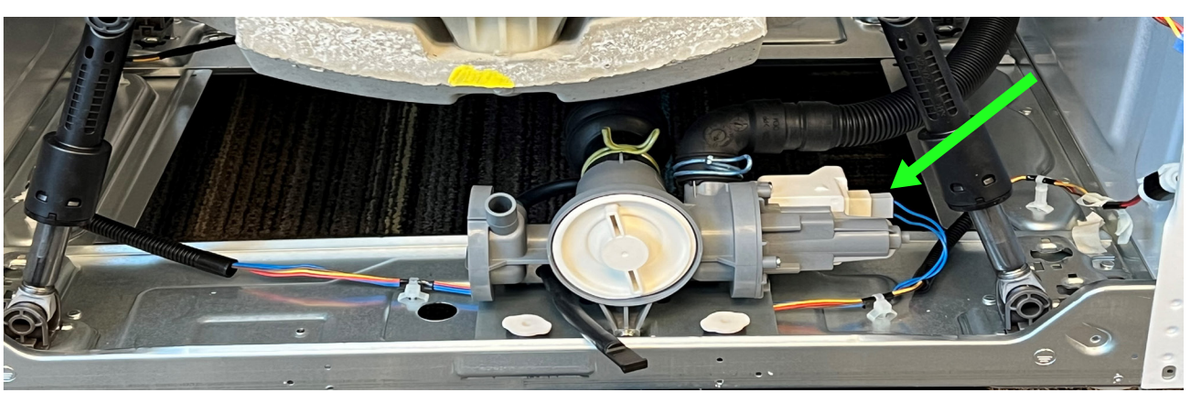
Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

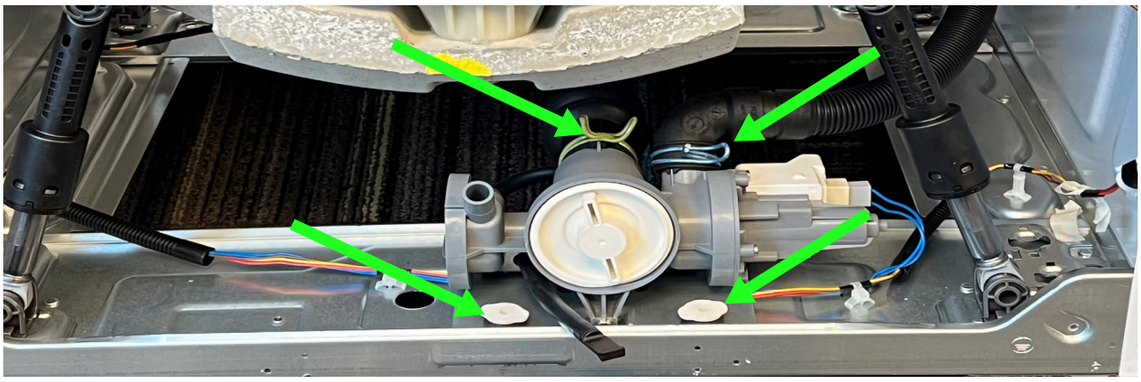
1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Complete steps 1-11 from Remove Front Panel.
6. Place container under drain pump filter to collect drain water.
7. Remove plug from black drain hose, drain out water from drain pump, and collect it into container.
8. Repeat this procedure if necessary until all water is drained out from drain pump.

NOTE: Make sure that black hose is completely dry and replace plug.

9. Disconnect blue Drain Pump wire connector.



10. Slide off hose clamps and remove drain hose, and tub to pump hose.
11. Pull up four (4) grommet pins to disengage pump from washer.



12. Remove Drain Pump assembly.
13. Follow reverse order of removal to reinstall Drain Pump.

REMOVE TUB ASSEMBLY

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Unplug washer or disconnect power.
2. Turn off water supply to washer.
3. Disconnect hot and cold water inlet hoses and remove drain hose from standpipe or laundry tub.
4. Complete steps 1-6 from Remove Top Panel.
5. Complete steps 1-6 from Remove Rear Panel.
6. Complete steps 1-8 from Remove Water Level Switch.
7. Complete steps 1-9 from Remove Water Inlet Valves.
8. Complete steps 1-9 from Remove Appliance Control Unit. (ACU).

9. Complete steps 1-15 from Remove Top Rear Bracket.
10. Complete steps 1-8 from Remove Wash Heater/ Thermistor Assembly.
11. Complete steps 1-10 from Remove Front Panel.
12. Complete steps 1-8 from Remove Single Dose Dispenser Assembly.
13. Complete steps 1-10 from Remove Direct Drive Motor.
14. Use either 1/4” Hex-head, or TORX®† T20® driver to remove top-front water channel and console bracket.
15. Use ratchet and Torx 50 bit to remove three (3) screws securing top counter weight to top of tub assembly. Remove counter weight and set aside for reassembly.
16. Use ratchet and a Torx 50 bit to remove three (3) screws securing bottom counter weight to bottom of tub assembly.
17. Remove counter weight and set aside for reassembly.
18. Press tab on one side of dampers (closest to tub), twist damper 1/4 turn to disengage from tub, then pull damper away from tub assembly. Repeat procedure for all dampers.
19. Disconnect all hoses connected to tub assembly.
20. Remove any harnesses that are secured or wire-tied to tub assembly.
21. Use either 1/4” hex-head or TORX®† T20® driver to remove four (4) screws securing Top Brace to right and left side panels.
22. Use this top brace to lift up tub assembly and remove tub from washer.
23. Follow reverse order of removal to reinstall tub assembly.

DIAGNOSTICS

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements.

After performing voltage measurements, disconnect power before servicing.

Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:

- Verify the controls are in the off position so that the appliance does not start when energized.
- Allow enough space to perform the voltage measurements without obstructions.
- Keep other people a safe distance away from the appliance to prevent potential injury.
- Always use the proper testing equipment.
- After voltage measurements, always disconnect power before servicing.

Abbreviations:
ACU: Appliance Control Unit

IF: Interference Filter

HMI: Human-Machine Interface

Diagnostic Guide

Before servicing, check the following:

Make sure there is power at the wall outlet.

Has a household fuse blown, or has a circuit breaker or GFCI tripped?

Was a regular fuse used?

Inform the customer that a time-delay fuse is required.

Are both hot and cold water faucets open and water supply hoses unobstructed?

Make sure the drain hose is not sealed into drain pipe, and that there is an air gap for ventilation.

Make sure lint build-up is removed from drain pump.

All tests/checks should be made with a VOM (volt-ohm-milliammeter) or DVM (digital-voltmeter) having a sensitivity of 20,000 Ω per volt DC or greater.

Resistance checks must be made with the washer unplugged or power disconnected.

IMPORTANT: Voltage checks must be made with all connectors attached to the boards.

IMPORTANT: Avoid using large-diameter probes when checking harness connectors, as the probes may damage the connectors upon insertion.

Check all harnesses and connections before replacing components.

Look for connectors that are not fully seated, broken or loose wires and terminals, pin insertion, or wires that are not pressed into connectors far enough to engage metal barbs.

A potential cause of a control not functioning is corrosion or contamination on connections. Use an ohmmeter to check for continuity across suspected connections.

SERVICE DIAGNOSTIC MODE

These tests allow service personnel to test and verify all inputs to the machine control electronics. You may want to do a quick and overall checkup of the washer with these tests before going to specific troubleshooting tests.

Activating Service Diagnostic Mode

1. Be sure the washer is in standby mode (plugged in with all indicators off).
2. After initial power is applied, wait 30 seconds before activating Service Diagnostic mode.
3. Select any three (3) buttons (such as Spin, Temp, Soil) and follow the steps below, using the same buttons. Remember the buttons and the order that the buttons were pressed.

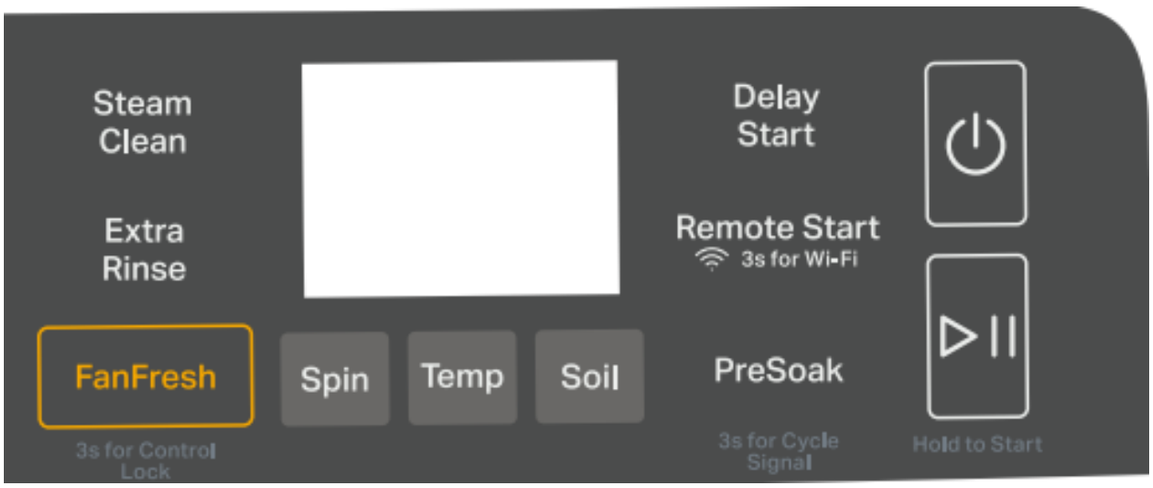
Within 8 seconds,

Press and Release the 1st selected button,

Press and Release the 2nd selected button,

Press and Release the 3rd selected button;

Repeat this 3 button sequence 2 more times.



Successful entry will show:

“This area is for Service Technicians only” and:

“Push Steam to exit: or Push Delay to enter”.

How to navigate in Service Diagnostic mode:

Extra Rinse = Left / Previous

Remote Start = Right / Next

Steam Clean = Back / Cancel

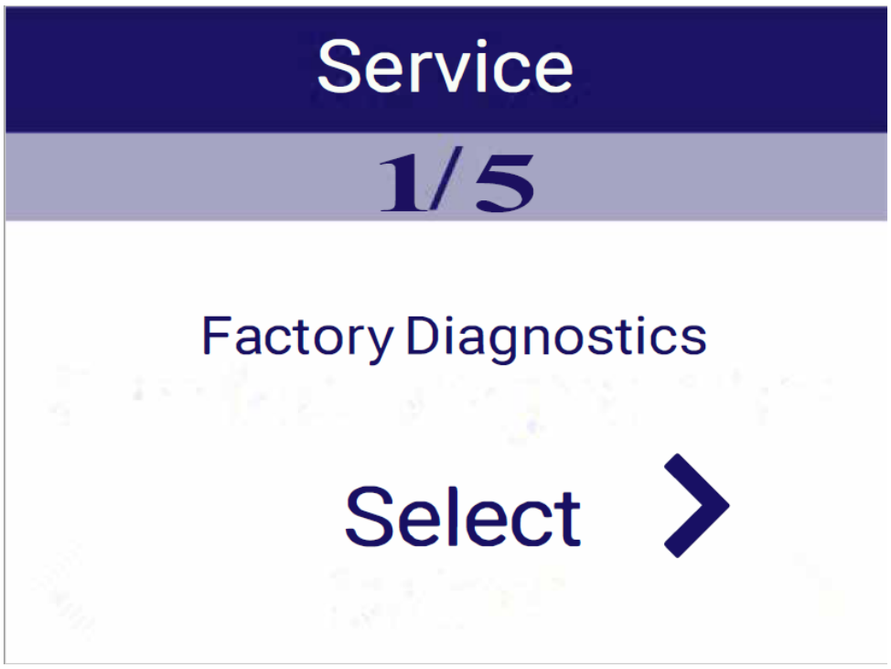
Delay Start = Ok / Save

Upon Entry you will find menus for Factory Diagnostics, System Information, Fault History, Service Diagnostics, and Exit Service Mode.

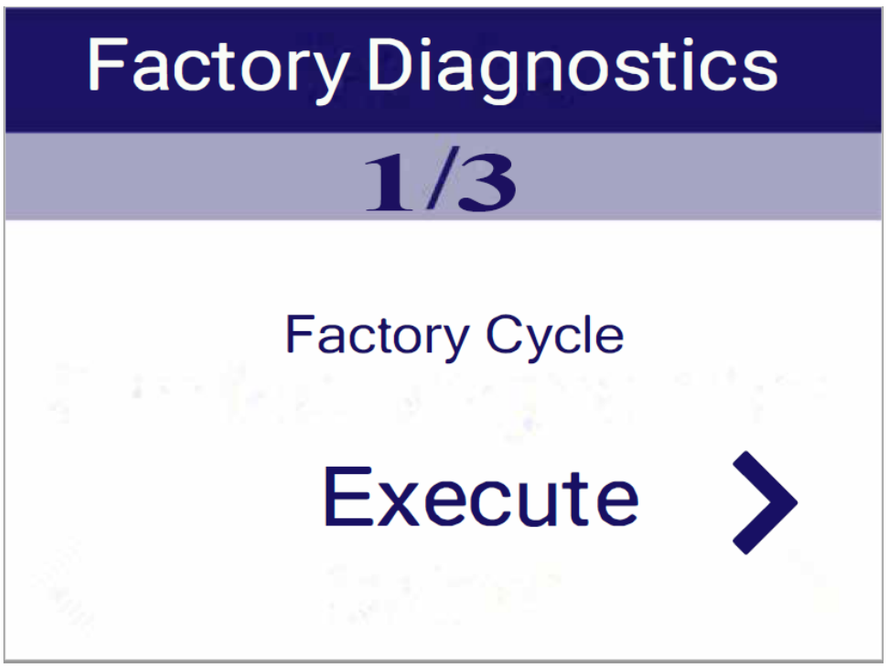
NOTE: The Service Diagnostic mode will time out after 10 minutes of user inactivity, or shut down if AC power is removed.

FACTORY DIAGNOSTICS

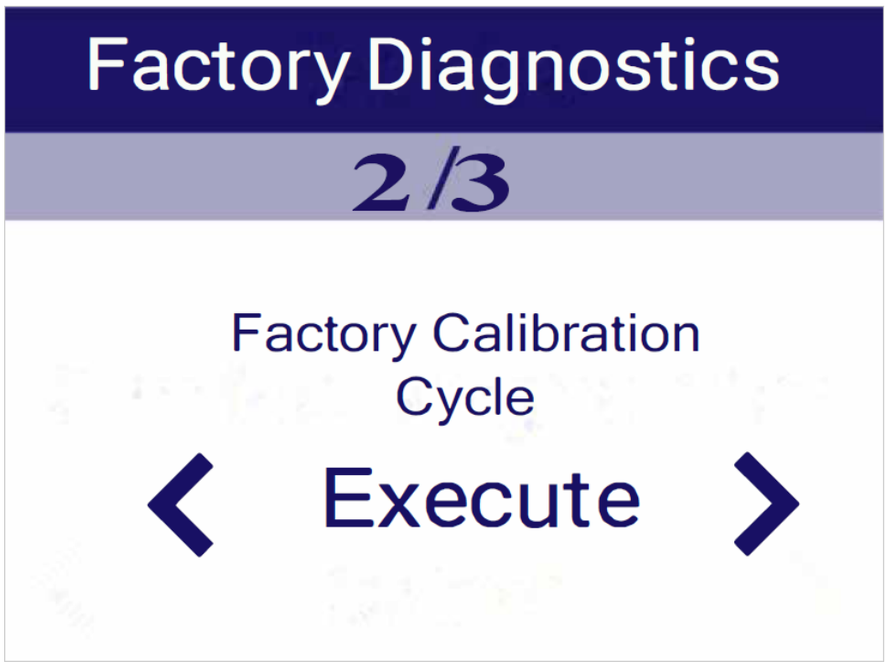
Enter Factory Diagnostics to run the Factory Cycle, Factory Calibration Cycle, and perform a Factory Reset.



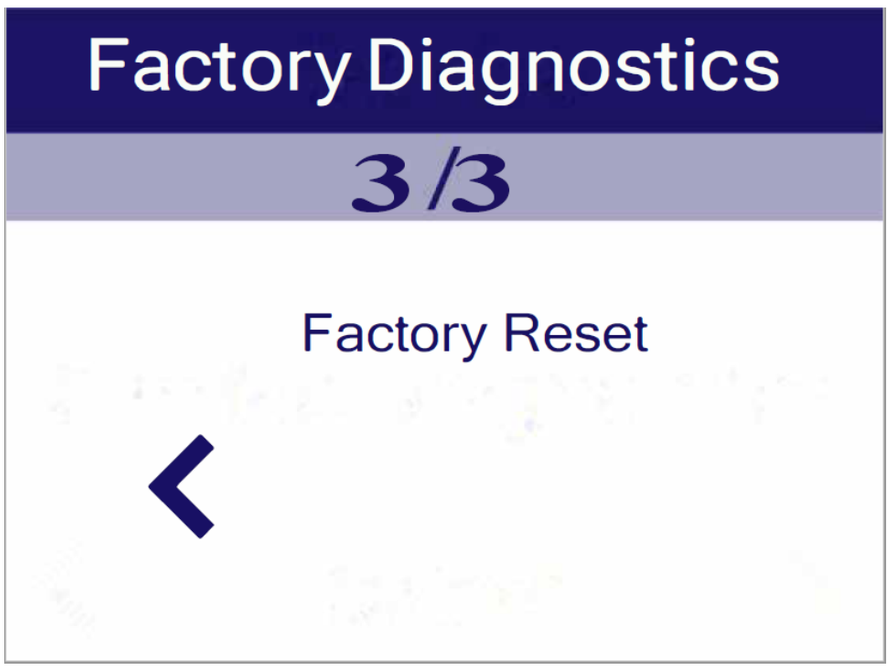
Factory Cycle (factory only).



Factory Calibration Cycle. This calibrates the main control to the washer for optimal load size estimation. **Calibration must be performed when any of the following components been replaced.** Main Control, Basket, Rotor, Stator. Not performing calibration could result in poor wash performance. Do NOT interupt calibration, disturb washer, or remove power; otherwise calibration must be repeated. Basket must be empty to perform test (no water or clothes). Calibration cycle runs for approximately 2 to 4 minutes. Cycle completes when door unlocks.

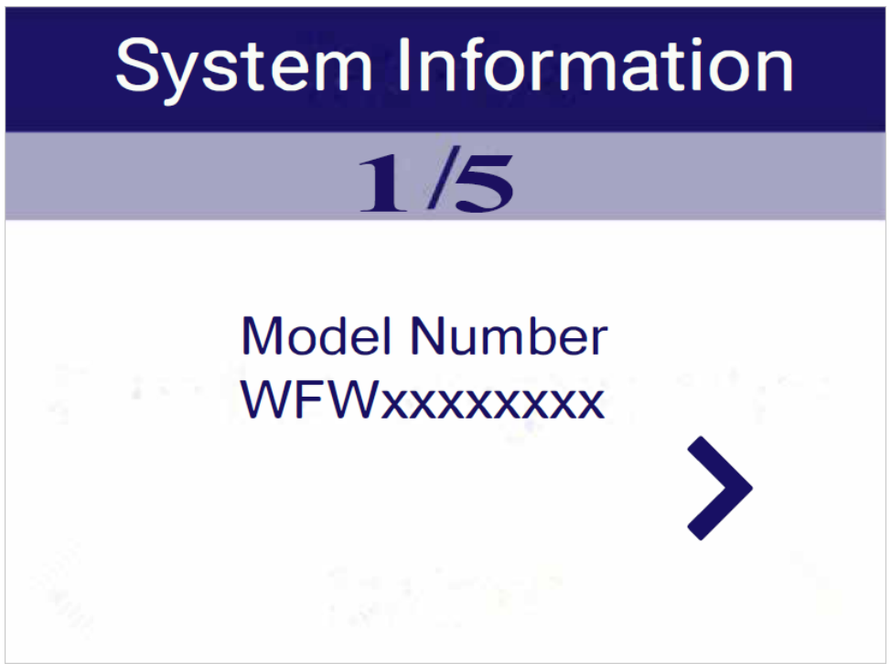


Factory Reset will fully reset the unit.

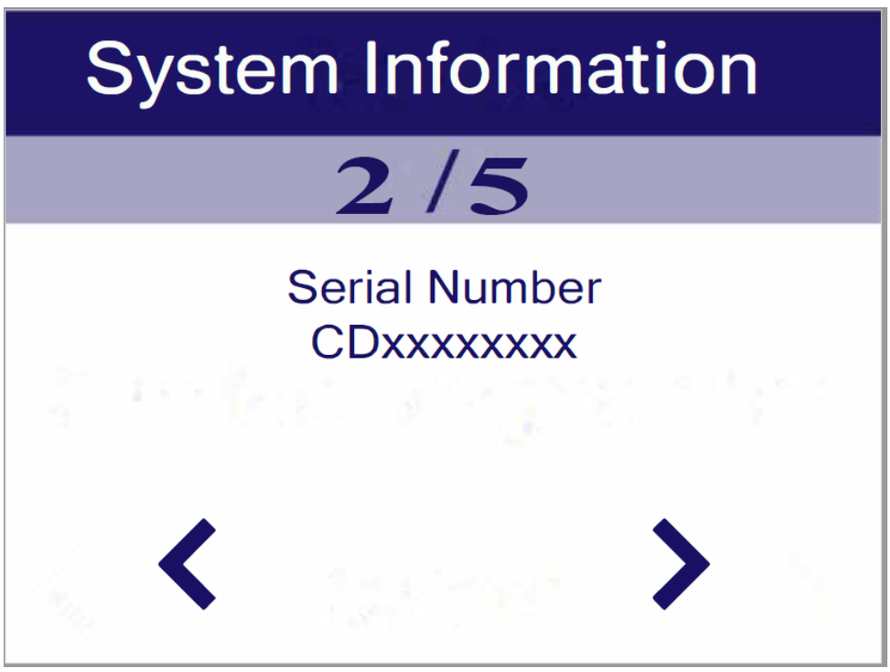


SYSTEM INFORMATION

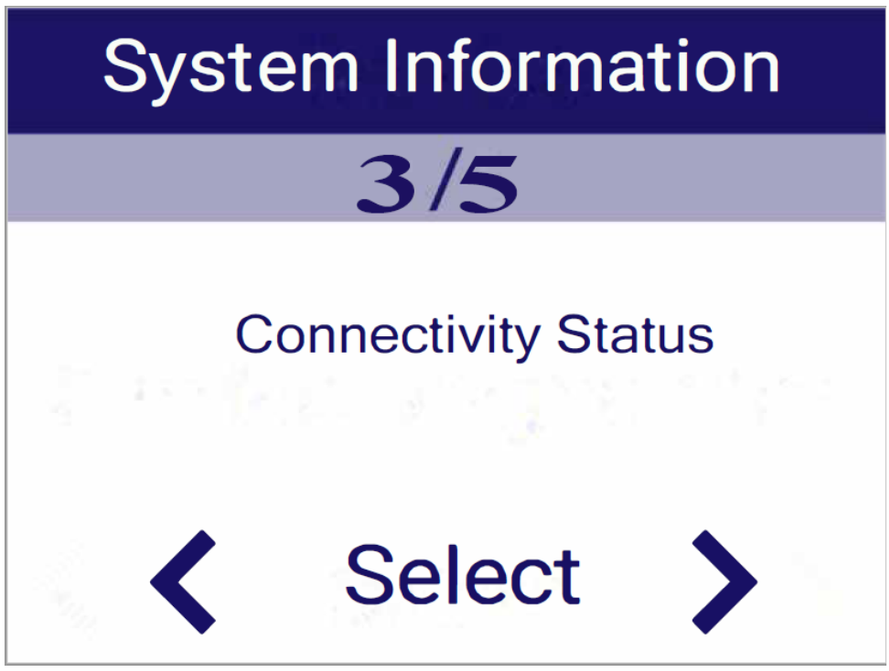
The first page in system information will show the model number with engineering digit.



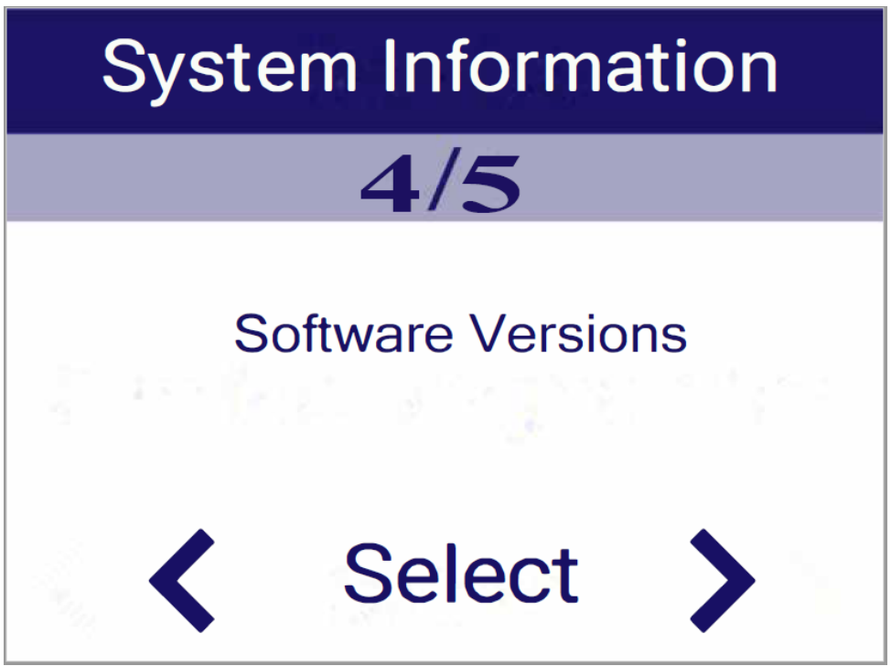
The second page will show the units serial number.



Page three shows the units Connectivity Status.



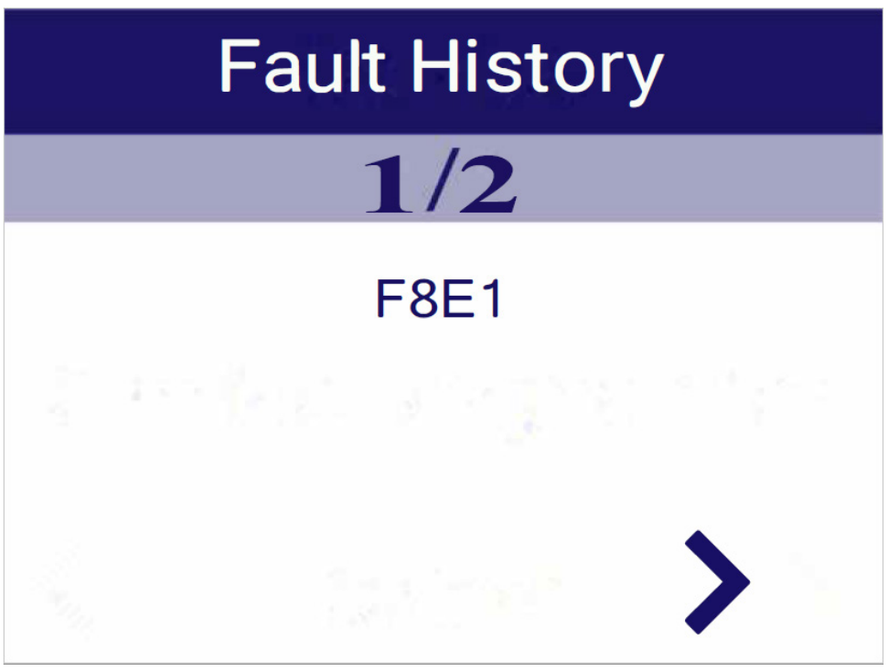
Software Versions are shown on page four.



HMI Software Build is on page five.

FAULT HISTORY

The third selection in Service Diagnostics will show the units Fault History. The most recent fault code will be shown first.

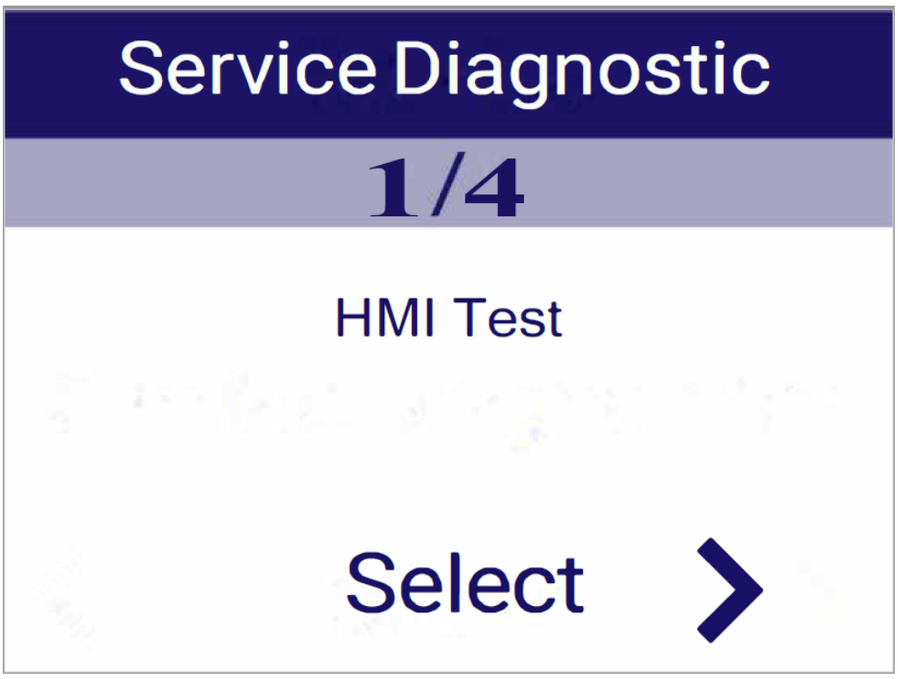


Go to the next page to clear all fault codes.

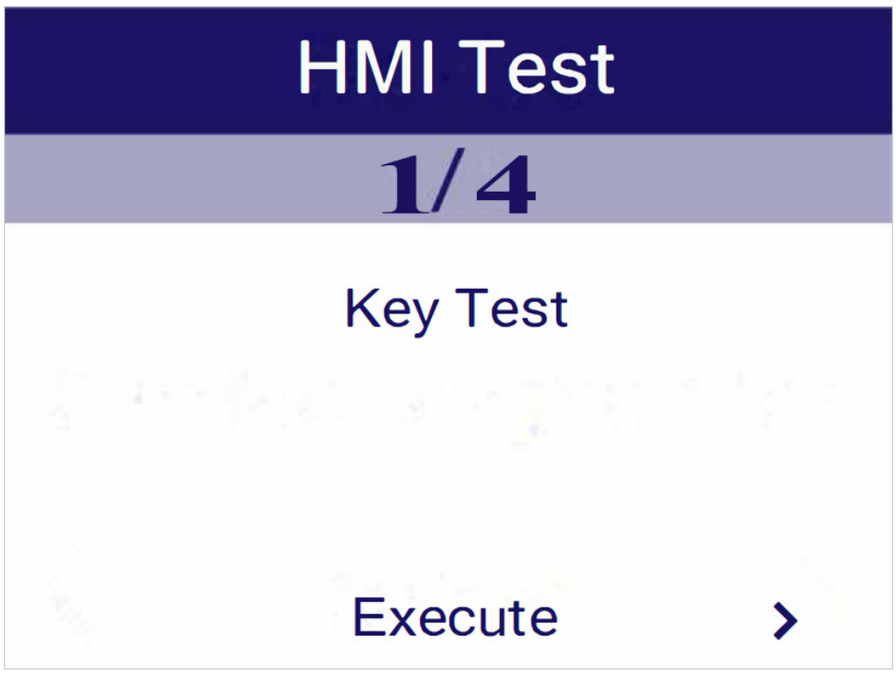
SERVICE DIAGNOSTIC

Service Diagnostic contains an HMI Test, Component Activation, Sensor Feedback, and the Diagnostic Cycle.

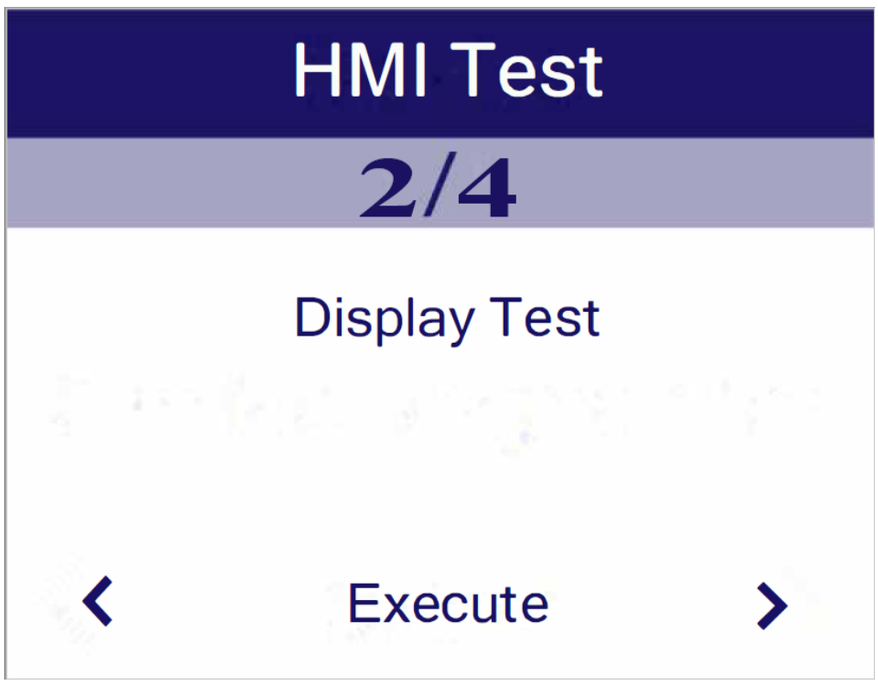
HUMAN MACHINE INTERFACE (HMI) TEST



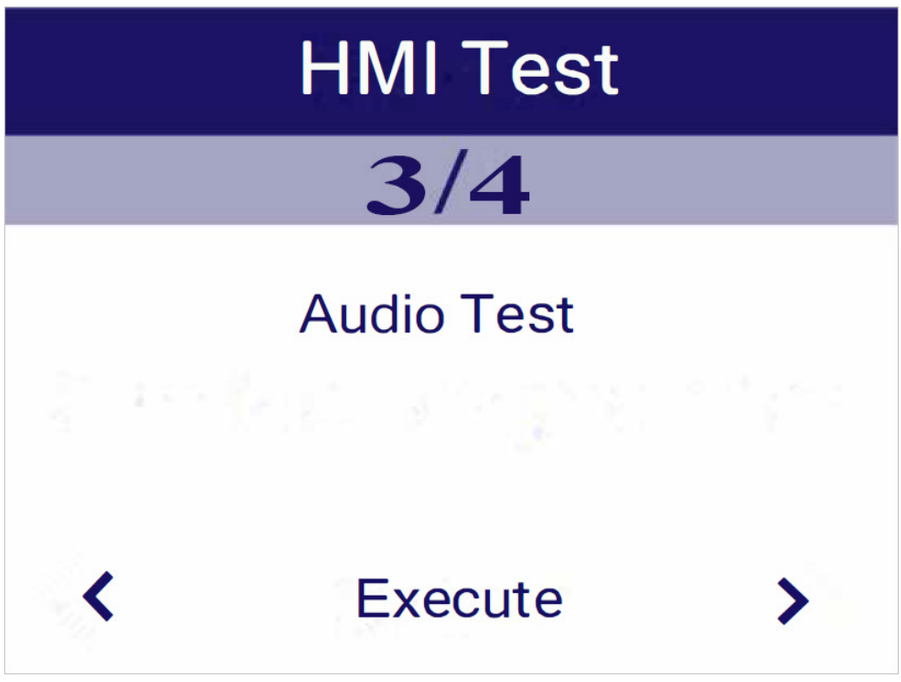
The first menu in the HMI test section is the Key Test. When this test mode is entered you can press each button and get feedback as to whether each is functioning properly. To exit Key test turn knob.



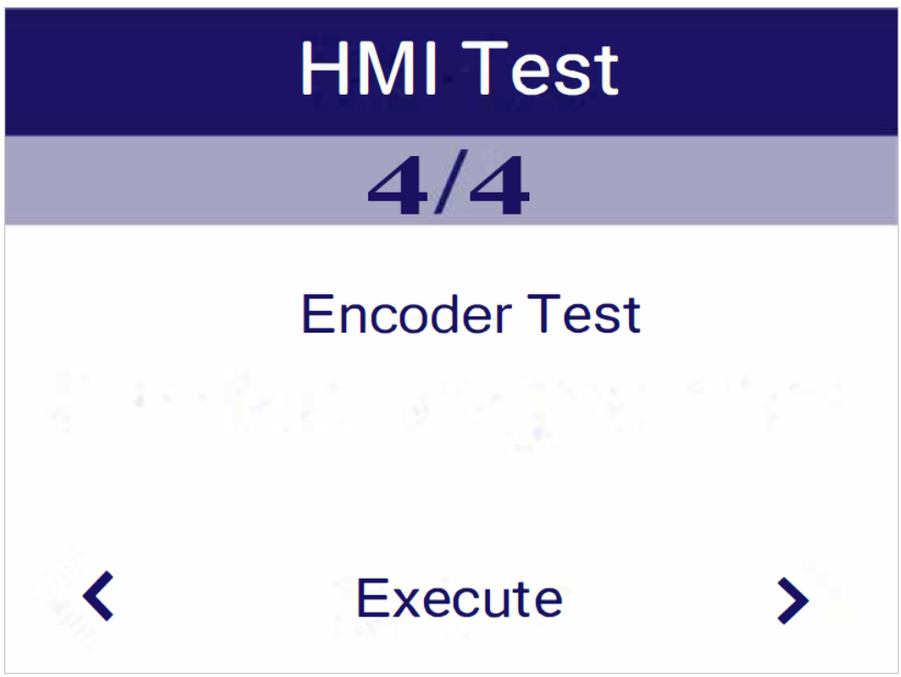
The Display Test will run a sequence of tests to show a fucntional display. Press Steam Clean to Exit.



The Audio Test will play some test tones to show the audio is working properly. Press Steam Clean to Exit.



The Encoder Test will allow the technician to turn the encoder and ensure each step is functioning. Press any key to Exit.

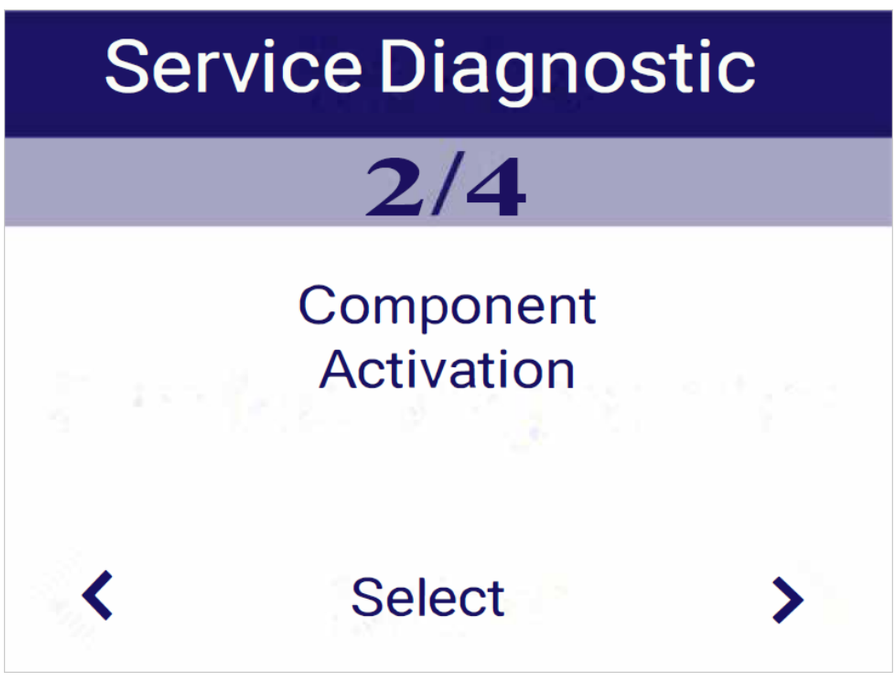


Exit Procedure

To exit HMI Test, press the Steam Clean button.

COMPONENT ACTIVATION

The Component Activation section allows the technician to test major components separately one at a time.



Press Delay Start to activate each component and Steam Clean to exit.

The components that can be activated are:

1. Cold Water Valve 1
2. Cold Water Valve 2
3. Hot Water Valve
4. Drain Pump
5. Recirculation Pump (not on this model)
6. Spin High Speed
7. Add Minimum Water Level and Turn on Heater
8. DVT Fan
9. Detergent Pump (not on this model).

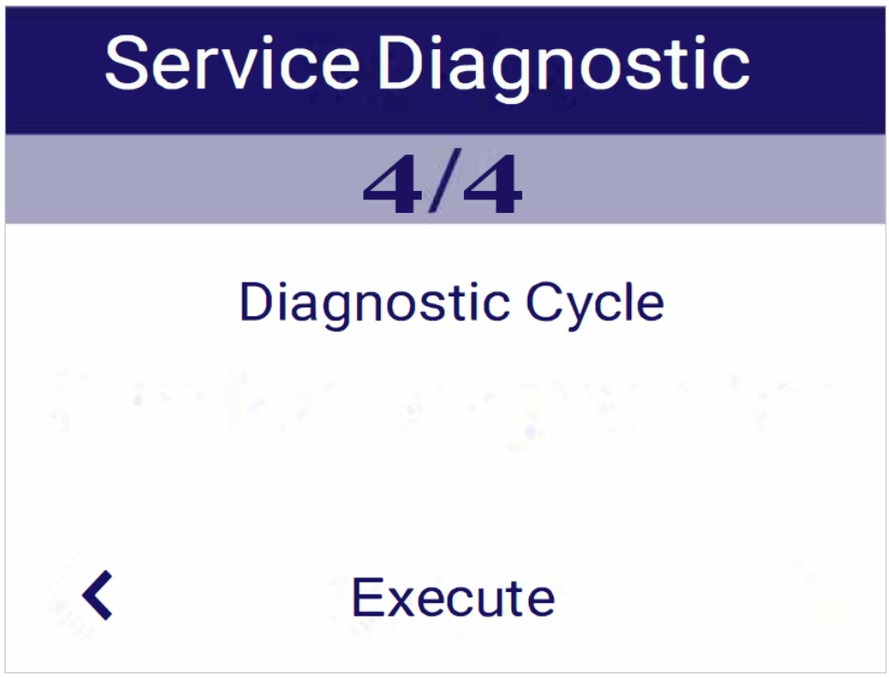
Exit Procedure

To exit Component Activation, press the Steam Clean button.

SENSOR FEEDBACK

NOTE: Early serial numbers may have a defect in which the sensor feedback does not report Door/Lid Lock, Water Level Pressure Sensor, and Inlet Thermistor correctly. This will be corrected in future software.

DIAGNOSTICS CYCLE



NOTE: The basket must be empty during this test.

Diagnostic Cycle Chart

Press Delay Start to begin test. Press Steam Clean to exit at any point.

NOTE: Each step may have a brief pause before the load turns on.

Step	Washer Function	Recommended Procedure	Est. Duration
1	Lock Door	If door does not lock, see TEST #4: Door Lock System.	10 sec.
2	Drain Pump necessary)	If drain pump does not turn on, see TEST #8: Drain/Recirculation Pump.	20 sec.
3	Cold 1 Valve	If no water, see TEST #6: Water Inlet Valves.	10 sec.
4	Cold 2 Valve	If no water, see TEST #6: Water Inlet Valves.	10 sec.
5	Hot Valve	If no water, see TEST #6: Water Inlet Valves.	10 sec.

6	Drain Pump	If drain pump does not turn on, see TEST #8: Drain/Recirculation Pump.	10 sec.
7	Recirculation Pump (on some models)	If recirculation pump does not turn on, see TEST #8: Drain/Recirculation Pump.	10 sec.
8	Drain Pump	If drain pump does not turn on, see TEST #8: Drain/Recirculation Pump.	10 sec.
9	Spin at 820 RPM	If drum does not spin, see TEST #3: Motor Circuit.	5 min.
10	Cold 1 Valve (fill to minimum fill level)	If no water, see TEST #6: Water Inlet Valves.	30 sec.
11	Wash Heater	If heater does not turn on, see TEST #9: Wash Heating Element	10 sec.
12	Dispenser Pump	If pump does not turn on, see TEST #11: Single Dose Dispenser.	10 sec.
13	Tumble	If drum does not spin, see TEST #3: Motor Circuit.	22 sec.
14	End of Cycle	Washer enters Standby Mode - Door Unlocks.	

NOTE: After executing the Diagnostic Cycle, recheck for new error codes.

FAULT ERROR CODES

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Fault/Error Code Display Method

Fault codes are displayed by showing F#E#. The F# indicates the suspect System/Category. The E# indicates the suspect Component system. The fault codes below may be indicated under various conditions and can be accessed through Service Diagnostics.

Code	Description	Explanation and Recommended Procedure
F0E1	Load detected during Clean Washer cycle	During the cleaning cycle, a load was detected inside the drum. Remove Load and restart the Clean Washer cycle. • Load inside the washer during clean cycle. • Mechanical friction on drive mechanism or drum.

F0E2	Oversuds	Fault is displayed when the pressure sensor detects rising suds level. The ACU will flush water in an attempt to clear suds. If the water flush is unable to correct the problem, this may indicate: • Not using HE detergent. • Excessive detergent usage. • Check pressure hose connection from tub to ACU. Is hose pinched, kinked, plugged, or leaking air?
F0E3	Over Load	Indicates washer is too full. • Remove some items and restart cycle.
F0E4	Spin Speed	Spin Speed Limited by Water Temperature.
F0E5	Off Balance Load	Fault is displayed when an off balance condition is detected. • Load unbalanced or too large. • Load is tightly packed in washer. • Washing single items. • Balance single item, such as a rug or jeans, with a few extra items.
F1E1	Appliance Control Unit Fault	Indicates an ACU fault. Try recycling power to washer. • See TEST #1: ACU Power Check.
F1E2	Appliance Control Unit Fault	Indicates a fault of the motor control section of the ACU. Try recycling power to washer. • See TEST #1: ACU Power Check. • See TEST #3: Motor Circuit.

F4E2	Main Heater Stuck On	Fault is displayed when the heater is stuck on. • Wash heater relay closed. • See TEST #9: Wash Heating Element.
F4E3	Main Heater Not Turning On	Fault is displayed when the heater is not turning on. • Wash heater relay open. • See TEST #9: Wash Heating Element.
F5E1	Door Switch Fault	Fault is displayed when the following condition occurs: • Door switch is open while the door is locked for more than 5 seconds. • See TEST #4: Door Lock System.
F5E2	Door Lock Will Not Lock or Door Lock Failure	Fault is displayed when one of the following conditions occur: • Door will not close completely due to interference. • ACU detects open door switch when attempting to lock. • ACU cannot determine if door lock is in a locked state. • See TEST #4: Door Lock System.
F5E3	Door Unlock Failure	Fault is displayed when one of the following conditions occur: • The washer is unable to unlock the door. • ACU cannot determine if door lock is in an unlocked state. • See TEST #4: Door Lock System.

F5E4	Door Not Open Between Cycles	Fault is displayed when one of the following conditions occur: • User presses START with door open. • User presses START after a predetermined number of consecutive washer cycles without opening the door. • The ACU cannot detect the door switch opening and closing properly. • See TEST #4: Door Lock System.
F6E1	Communication Error: ACU Cannot Hear HMI	Fault is displayed when communications between the HMI and ACU has not been detected. Try recycling power to washer. • Verify continuity in cable between ACU (J10) and HMI. See wiring diagram. • Check AC and DC supplies. See TEST #1 (ACU Power Check). • See TEST #2: Human Machine Interface.
F6E2	Communication Error: ACU Cannot Hear MCU	Fault is displayed when communications between the ACU and MCU has not been detected. Try recycling power to washer. • Verify continuity in cable between ACU (J10) and HMI. See wiring diagram. • Check AC and DC supplies. See TEST #1 (ACU Power Check).

F6E3	No Communication between ACU and DMS.	Fault is displayed when communications between the ACU and DMS has not been detected. Try recycling power to washer. • Check AC and DC supplies. See TEST #1 (ACU Power Check). • See TEST #3: Motor Circuit.
F7E2	Motor Control/ Internal Fault	Fault is displayed when the ACU has detected a problem with the motor. Try recycling power to washer. • Check harness continuity and connections between ACU and motor. • Check AC and DC supplies. See TEST #1 (ACU Power Check). • See TEST #3: Motor Circuit.
F7E8	Motor Control/ Over Temp Detected	Fault is displayed when the ACU has detected a problem with the motor. Try recycling power to washer. • Check harness continuity and connections between ACU and motor. • Check AC and DC supplies. See TEST #1 (ACU Power Check). • See TEST #3: Motor Circuit.
F7E9	Motor Locked Rotor	See TEST #3: Motor Circuit.

F7EA or F7E10	Motor Control/ Lost Phase Fault	Fault is displayed when the ACU has detected a problem with the motor. Try recycling power to washer. • Check harness continuity and connections between ACU and motor. • Check AC and DC supplies. See TEST #1 (ACU Power Check). • See TEST #3: Motor Circuit.
F7EC or F7E12	Motor Control/ Motor Overload Fault	Fault is displayed when the ACU has detected a problem with the motor. Try recycling power to washer. • Check harness continuity and connections between ACU and motor. • Check AC and DC supplies. See TEST #1 (ACU Power Check). • See TEST #3: Motor Circuit.

F8E1	No Fill, Long Fill, Water Taps Closed	Fault is displayed when the water level does not change for a period of time OR water is present, but the ACU does not detect the water level changing. • Is water supply connected and turned on? • Are water supply hoses kinked? • Are hose screens plugged? • Low water pressure; fill times longer than 10 minutes. • Is the pressure hose connection from the tub to the pressure switch pinched, kinked, plugged, or leaking air? • See TEST #6: Water Inlet Valves.
F8E3	Overflow	Make sure drain hose and drain pump filter are not plugged. Verify functionality of water inlet valve, water level sensor, and drain/ recirculation pump. • See TEST #6: Water Inlet Valves. • See TEST #7: Water Level Sensor. • See TEST #8: Drain/ Recirculation Pump.
F8E5	Hot / Cold Water Supply Reversed	Reverse hot and cold water supply hoses.

F9E1	Long Drain	Fault is displayed when the water level sensor does not change after the drain pump is on. • Check drain hose installation for proper height. • Check drain hose and filter for obstructions, and make sure drain hose is not sealed into drain pipe. • Is the pressure hose connection from the tub to the pressure switch pinched, kinked, plugged, or leaking air? • Check functionality of drain/ recirculation pump. • See TEST #8: Drain/ Recirculation Pump.
FAE1		Shipping Bolts Installed.

TROUBLESHOOTING GUIDE

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

NOTE: Always check for error/fault codes first. Some tests will require accessing components. See “Component Access” for component locations. For detailed testing procedures, refer to “Component Testing.”

Problem	Possible Cause	Checks & Tests
Won’t Power Up No operation No keypad response No LED’s or display	No power to washer.	Check power at outlet, check circuit breakers, fuses, or junction box connections.
	Connection problem between AC plug and ACU.	Check connections between the AC power cord and ACU for continuity.

	Connections between ACU and HMI.	Check connections and harness continuity between the ACU and HMI.
	ACU problem.	See TEST #1: ACU Power Check.
	HMI problem.	See TEST #2: Human-Machine Interface.
Won't Start Cycle No response when START is pressed Important: Starting a cycle requires "Press and hold" of START button	Control lock is activated.	Check if the control lock LED/ icon is on. If so, press and hold to deactivate it.
	Three consecutive cycles were run without opening the door.	Open and close the door before starting the cycle.
	Door lock mechanism not functioning.	1. Door not closed due to interference. 2. Lock not closed due to interference. 3. See TEST #4: Door Lock System.
	Connections between ACU and HMI.	Check connections and harness continuity between ACU and HMI.

	HMI problem.	See TEST #2: Human-Machine Interface.
	ACU problem.	See TEST #1: ACU Power Check.
HMI Won't Accept Selections	Control lock is activated.	Check if the control lock LED/ icon is on. If so, press and hold to deactivate it.
	Connections between ACU and HMI.	Check connections and harness continuity between ACU and HMI.
	HMI problem.	See TEST #2: Human-Machine Interface.
	ACU problem.	See TEST #1: ACU Power Check.
Door Won't Lock	Door not closed.	Ensure that door is completely closed.
	Door lock obstructed.	Check mechanism for obstruction.
	Door lock mechanism not functioning.	See TEST #4: Door Lock System.
Door Won't Unlock	Reset washer.	Unplug and reconnect the power cord. Wait 2 minutes to see if the washer door unlocks.
	Misaligned, broken, or overtightened door latch.	Check door lock mechanism and repair as necessary.
	Door lock mechanism not functioning.	See TEST #4: Door Lock System.
Won't Dispense	No water supplied to washer.	A. Check water connections to washer. B. Verify that hot and cold water supply is turned on.

	Dispenser clogged with detergent.	Clean obstruction from dispenser.
	Valve problem.	See TEST #6: Water Inlet Valves.
	Dispenser system problem.	See TEST #11: Single Dose Dispenser.
Won't Fill (Normal water level is only 2.5" to 5" [63.5mm to 127mm] inside tub.)	No water supplied to washer or low water pressure.	A. Check water connections to washer. B. Verify that hot and cold water supply is turned on.
	Plugged filter/ screen, or plugged air trap.	Check for plugged filter or screen in the inlet valves or hoses. Check for air trap obstructions.
	Drain hose installation.	Check for proper drain hose installation. Is water siphoning out of the drain hose?
	Valve problem.	See TEST #6: Water Inlet Valves.
	Water level sensor problem.	See TEST #7: Water Level Sensor.
Overfills	Drain hose/ filter or air trap is plugged.	Check for hose, drain filter, and air trap obstructions.
	Valve(s) not shutting off.	See TEST #6: Water Inlet Valves.
	Water level sensor problem.	See TEST #7: Water Level Sensor.

	Drain/ recirculation pump problem.	See TEST #8: Drain/ Recirculation Pump.
Drum Won't Rotate	Door is not locked. Is door locking after starting a cycle?	Verify harness connections and see TEST #4: Door Lock System.
	Garment or mechanical obstruction between drum and tub.	Try to move the drum while the washer is unpowered to see if it can move freely. If not, check for a garment or other object obstructing movement.
	Harness connections.	Check harness continuity and connections between ACU and motor.
	Motor problem.	See TEST #3: Motor Circuit.
Motor Overheats	Mechanical friction.	Check for obstruction between drum and outer tub.
	Harness connections.	Check harness continuity and connections between ACU and motor.
	Motor problem.	See TEST #3: Motor Circuit.
Won't Drain	Drain hose installation.	Check for proper drain hose installation. Make sure drain hose is not inserted more than 4.5" (114 mm). Make sure drain hose is not sealed into drain pipe, and that there is an air gap for ventilation.
	Plugged drain hose or air trap.	Check drain hose and air trap for obstructions.

	Obstructions to drain pump.	Check and clean drain filter of obstructions.
	Harness connections.	Check harness continuity and connections between ACU and drain pump.
	Drain/ recirculation pump problem.	See TEST #8: Drain/ Recirculation Pump.
No Button Sound	Button sound has been deactivated.	See TEST #2: Human-Machine Interface.
Incorrect Water Temperature	Water hose installation.	Make sure inlet hoses are connected properly and that valves are turned on fully. The hot and cold valves on the washer are labeled.
	No hot water dispensed.	Ensure that household hot water is present at the tap. Minimum 120°F (49°C).
	Heating element problem.	See TEST #9: Wash Heating Element.
	Temperature sensor problem.	See TEST #10: Wash Temperature Sensor.
Drum Light Does Not Turn On (on some models)	Door switch problem.	See TEST #4: Door Lock System.
	Harness connections.	Check harness continuity and connections between HMI and drum light.
	Drum light problem.	See TEST #5: Drum Light.

Leaking	Supply hose connection.	Check hose connections and for damage to rubber gasket due to over-tightening.
	Drain hose installation.	Check for proper drain hose installation.
	Plugged drain hose or house drain pipe.	Check drain hose for obstructions and make sure house drain pipe is not blocked.
	Overloading the washer.	Overloading can partially push the door open.
	Internal hose connections.	Check internal hose connections for leakage.
	Check bellows.	Check for holes in the bellows. If there are none, remove, reposition,and reinstall the bellows. Make sure the bellows is not wrinkled.
	Dispenser leaking.	Check the dispenser for leakage from the front and from the plastic box itself.
	Ventilation tube leaking.	Ensure that the ventilation tube connected to the rear of the tub is installed correctly.
	Heater leaking.	Make sure heater is seated and torqued down to 4.5Nm ± 0.5Nm.
Vibration or Noise	Heater is loose.	Make sure heater is torqued down to 4.5Nm ± 0.5Nm.
	Shipping kit not removed.	Verify that shipping bolts and spacers are removed.
	Washer not level.	Level washer per installation instructions.
	Floor stability.	Weak floors can cause vibration and walking of the washer.

	Leveling lock nuts not tightened.	Tighten leveling lock nuts.
	Clogged inlet screens making high-pitched noise.	Disconnect hoses and clean screens.
	Spring/ damper installation.	Check for proper spring and damper placement and installation.
	Washer panel noise.	Inspect washer panels for bending, warpage, or damage. Check for loose fasteners.
	Ventilation hose becoming disconnected.	Verify the connection of the ventilation hose to the tub and the back bracket.
	Water level sensor hose slapping on the tub.	Make sure the hose is fastened properly.
Poor Wash Performance Please reference Use & Care Guide	Oversuds.	1. Verify use of HE detergent. 2. Excessive detergent usage. 3. Check drain hose and filter for obstructions.
	Incorrect water level.	See “WON’T FILL”.
	Clothes wet after cycle is complete.	1. Single or tangled items in the washer. 2. Oversuds (see above). 3. See “WON’T DRAIN”.

	Load not rinsed.	1. Check proper water supply. 2. Not using HE detergent. 3. Verify that load is not bunched or bundled when placed in washer. 4. See TEST #6: Water Inlet Valves.
	Not cleaning clothes.	1. Verify that load is not bunched or bundled when placed in washer. 2. Not using HE detergent. 3. Not using correct cycle. 4. Not using dispensers.
	Fabric damage.	1. Washer overloaded. 2. Bleach was added incorrectly (directly into the tub rather than through the dispenser). 3. Sharp items in tub.
	Wrong option or cycle selection.	Refer customer to “Use & Care Guide”.

MANUALLY UNLOCKING THE DOOR

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

How to Manually Open the Door:

Before removing the top of the washer as described below, refer to the failure “Door will not unlock” in the “Troubleshooting” section. The door may unlock by itself after the failure condition no longer exists. If the door still cannot be opened, perform the following:

Before Opening Door:

1. Turn off and unplug the washer.
2. Close the water faucets.
3. Wait until the drum has stopped rotating – never open the door while the drum is in motion.
4. Wait until water and laundry have cooled down when washing with high temperatures. Always drain the water before opening the door by:

To Unlock and Open Washer Door:

1. Remove the top of the washer by removing the three 1/4” hex-head screws in the back. Slide top back and up (see Figure 1).

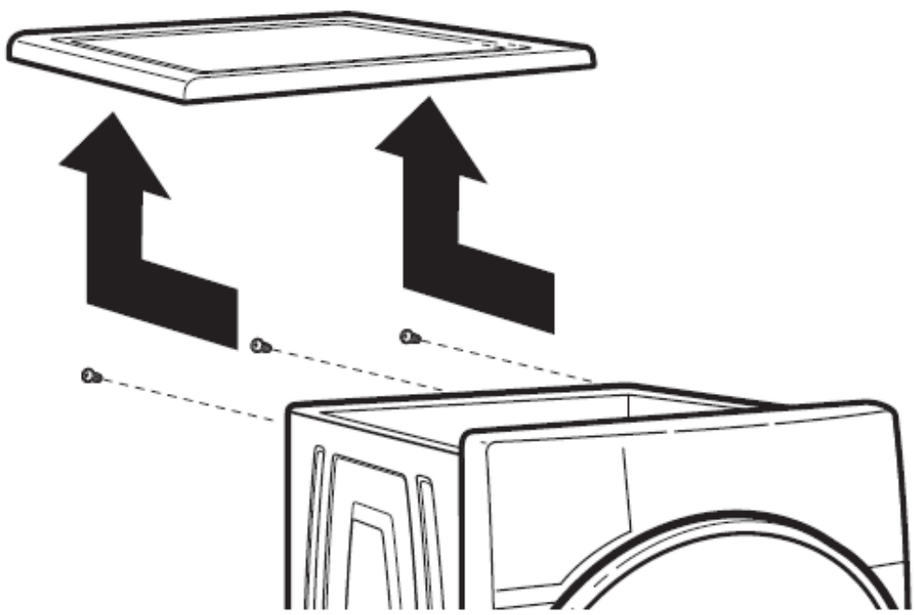


Figure 1

2. Locate the locking mechanism (Figure 2) on the right-hand side of the washer interior about half-way down.

3. Press down on locking mechanism until the latch is released. The door can now be opened and the laundry removed, if needed.

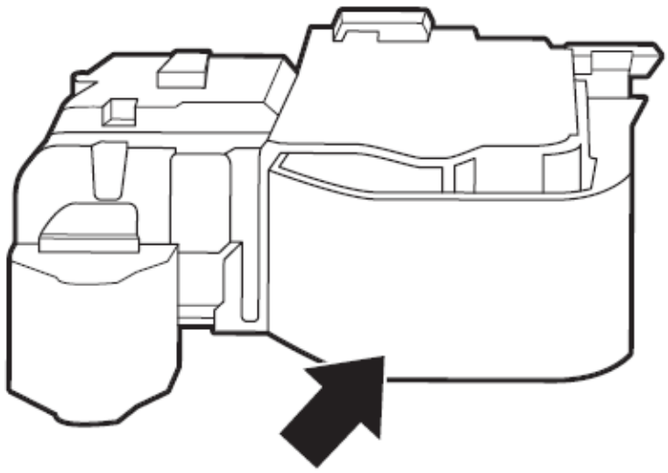


Figure 2

COMPONENT TESTING

For Service Technician Use Only

⚠ DANGER

Electrical Shock Hazard

Only authorized technicians should perform diagnostic voltage measurements.

After performing voltage measurements, disconnect power before servicing.

Failure to follow these instructions can result in death or electrical shock.

⚠ WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Voltage Measurement Safety Information

When performing live voltage measurements, you must do the following:

- Verify the controls are in the off position so that the appliance does not start when energized.
- Allow enough space to perform the voltage measurements without obstructions.
- Keep other people a safe distance away from the appliance to prevent potential injury.
- Always use the proper testing equipment.
- After voltage measurements, always disconnect power before servicing.

IMPORTANT: Electrostatic Discharge (ESD) Sensitive Electronics

ESD problems are present everywhere. Most people begin to feel an ESD discharge at approximately 3000V. It takes as little as 10V to destroy, damage, or weaken the main control assembly. The new main control assembly may appear to work well after repair is finished, but a malfunction may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to green ground connection point or unpainted metal in the appliance

-OR-

- Touch your finger repeatedly to a green ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contacts; handle electronic control assembly by edges only.
- When repackaging main control assembly in anti-static bag, observe above instructions.

IMPORTANT SAFETY NOTICE — "For Technicians only"

This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.

WIRING DIAGRAM

ServiceMatters Tech Sheet Link

FOR SERVICE TECHNICIAN'S USE ONLY / POUR LE TECHNICIEN SEULEMENT / PARA SER USADO ÚNICAMENTE POR TÉCNICOS DE SERVICIO

W11678280B

IMPORTANT: Electrostatic discharge may cause damage to machine control electronics. Refer to online Tech Sheet for additional information.

Check for proper voltage by completing the following steps:
1. Unplug appliance or disconnect power.
2. Connect voltage measurement equipment to proper connectors.
3. Plug in appliance or reconnect power and confirm voltage reading.
4. Unplug appliance or disconnect power.

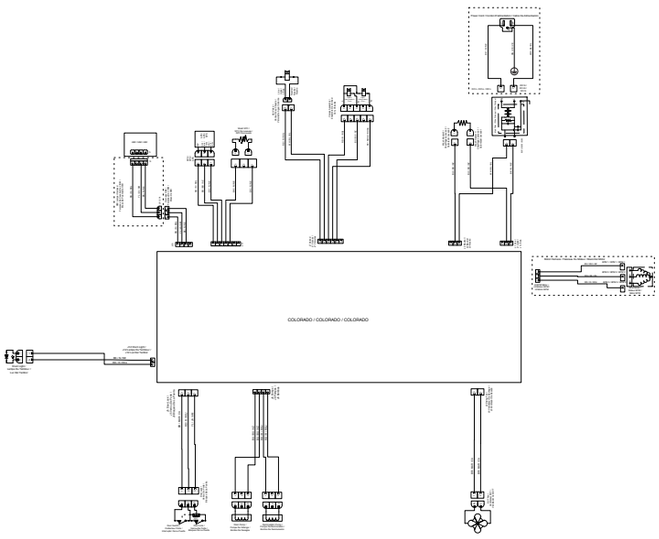
IMPORTANT : Une décharge d'électricité statique peut faire subir des dommages aux circuits électroniques. Pour plus d'informations, consulter la fiche technique du produit en ligne.

Contrôler que la tension est correcte en effectuant les étapes suivantes :
1. Débrancher l'appareil ou déconnecter la source de courant électrique.
2. Brancher l'outil de mesure de la tension aux bons connecteurs.
3. Brancher l'appareil ou reconnecter la source de courant électrique et vérifier la tension.
4. Débrancher l'appareil ou déconnecter la source de courant électrique.

IMPORTANTE: La descarga electrostática puede causar daños en los componentes electrónicos de control de la máquina. Consulte la hoja técnica en línea para obtener información adicional.

Para verificar el voltaje adecuado, complete los siguientes pasos:
1. Desenchufe el aparato o desconecte el suministro de energía.
2. Conecte el equipo de medición de voltaje en los conectores correspondientes.
3. Enchufe el aparato o vuelva a conectar el suministro de energía y confirme la lectura de voltaje.
4. Desenchufe el aparato o desconecte el suministro de energía.

WIRE DIAGRAM / SCHÉMA DE CÂBLAGE / DIAGRAMA DE CABLEADO

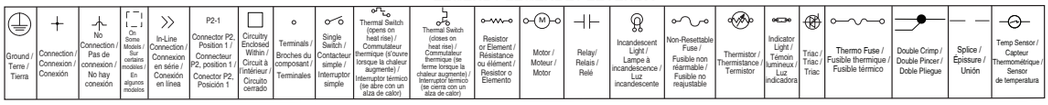


WIRE LABEL DESCRIPTION / DESCRIPTION DE FIL / DESCRIPCIÓN DE LA ETIQUETA DEL CABLE	
1569	UL WIRE STYLE / STYLE DE FIL UL / ESTILO DE CABLE UL
BK	WIRE COLOR / COULEUR DU FIL / COLOR DEL CABLE
22	WIRE GAUGE / CALIBRE DU FIL / CALIBRE DEL CABLE

RESISTANCES / RÉSISTANCES / RESISTENCIAS

COMPONENT / COMPOSANT / COMPONENTE	VOLTAGE / RESISTANCE TENSION / RÉSISTANCE VOLTAJE / RESISTENCIA
Door Lock System / Système de verrouillage de la porte / Sistema de bloqueo de la puerta	60-90 Ω
Motor Harness / Faisceau du moteur / Mazo del motor	60-20 Ω
Drum Light / Lampe du tambour / Luz del tambor	2.9-3.5 VDC
Cold 1 Fill Valve / Vanne de remplissage froid 1 / Válvula de llenado fría 1	1100-1350 Ω
Cold 2 Fill Valve / Vanne de remplissage froid 2 / Válvula de llenado fría 2	1100-1350 Ω
Hot 1 Fill Valve / Vanne de remplissage chaud 1 / Válvula de llenado caliente 1	1100-1350 Ω
Water Level Sensor / Capteur du niveau d'eau / Sensor del nivel de agua	5 VDC
Drain pump / Pompe de vidange / Bomba de desagüe	18.5-21.5 Ω
Recirculation Pump / Pompe de recirculation / Bomba de recirculación	36-46 Ω
Wash Heating Element / Élément de chauffage de la laveuse / Elemento calentador para el lavado	7-30 Ω
Vent Fan - Fan Terminals / Ventilateur – Bornes du ventilateur / Ventilador - Terminales del ventilador	<10 MΩ

LEGEND / LÉGENDE / LEYENDA



TESTING WASHER COMPONENTS FROM THE CONTROL. Before testing any of the components, perform the following checks: The most common cause for misdiagnosed control failure is poor connections. Therefore, disconnecting, inspecting and reconnecting wires will be necessary throughout test procedures. All tests/checks should be made with a VOM or DVM having a sensitivity of 20,000 ohms-per-volt DC, or greater. Check all connections before replacing components, looking for broken or loose wires, failed terminals, or wires not pressed into connectors far enough.

IMPORTANT: Voltage checks must be made with all connectors attached to the boards.

IMPORTANT: Resistance checks must be made with power cord unplugged or power disconnected, and with wiring harness or connectors disconnected from the control.

IMPORTANT: The following procedures may require the use of needle probes to measure voltage. Failure to use needle probes will damage the connectors.

TEST #1: ACU POWER CHECK

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test checks for incoming and outgoing power to and from Appliance Control Unit (ACU). This test assumes that proper voltage is present at the outlet.

1. Unplug washer or disconnect power.
2. Remove top panel to access the machine electronics.
3. Visually check that all connections to the interference filter (IF) are securely connected. See Figure 1, below.
4. Visually check that all connections to the ACU are fully inserted.
5. If both visual checks pass, go to step 6.
6. Plug in washer or reconnect power.
7. With a voltmeter set to AC, check for line voltage at the input of the interference filter. If line voltage is present, go to step 8. If line voltage is not present, verify the continuity of the power cord. If it fails the continuity check, replace the power cord.
8. With a voltmeter set to AC, check for line voltage at the output of the interference filter. See Figure 1 below. If line voltage is present, go to step 9.If line voltage is not present, replace the interference filter.
9. With a voltmeter set to AC, check for input line voltage to the ACU across pins 2 and 3 of connector J1 AC In (IF filter).. If line voltage is present, go to step 10. If line voltage is not present, check harnesses and connections between the filter and the ACU. Visually inspect inside

connector housing for bent or damaged terminals. Repair as necessary.

10. Service LED/DC Supply

The ACU is equipped with a status LED. This LED indicates the health of the ACU. After the ACU is plugged in, the LED will blink rapidly for a few seconds, then will blink slowly (0.5s on, 0.5s off). This LED indicates the functionality of the microcontroller and power supply:

A. If the LED is not lit, there is not 5 volts DC supply to the microcontroller. Replace the ACU.

B. If the LED is not blinking slowly within 30 seconds of being power up, the microcontroller is not responding. Replace the ACU.

C. If the LED is blinking slowly (0.5s on, 0.5s off) during washer operation, the ACU is probably OK and the problem is elsewhere.

Check HMI input voltage:

Verify that there is 5 VDC between pins 2 and 3 at J10.

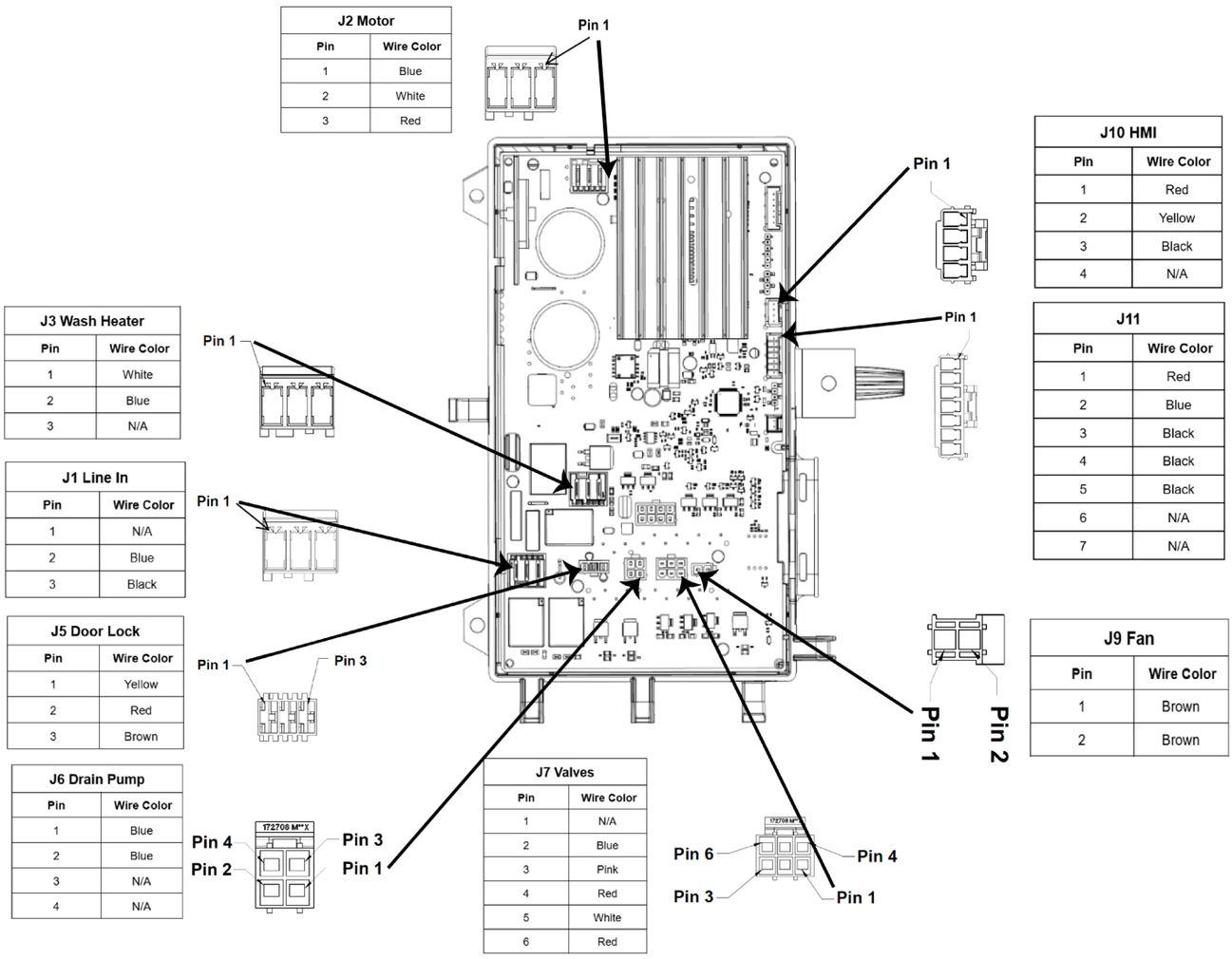
Verify that there is 12 VDC between pins 1 and 3 at J10.

11. Unplug washer or disconnect power.
12. Reassemble all parts and panels.
13. Perform the “Diagnostic Cycle” to verify repairs.

ACU CONNECTORS & PINOUTS - FIGURE 2

NOTE: Not all options are available on all models.

IMPORTANT: Electrostatic discharge may cause damage to Appliance Control Unit (ACU).



J2 Motor	
Pin	Wire Color
1	Blue
2	White
3	Red

J10 HMI	
Pin	Wire Color
1	Red
2	Yellow
3	Black
4	N/A

J3 Wash Heater	
Pin	Wire Color
1	White
2	Blue
3	N/A

J11	
Pin	Wire Color
1	Red
2	Blue
3	Black
4	Black
5	Black
6	N/A
7	N/A

J1 Line In	
Pin	Wire Color
1	N/A
2	Blue
3	Black

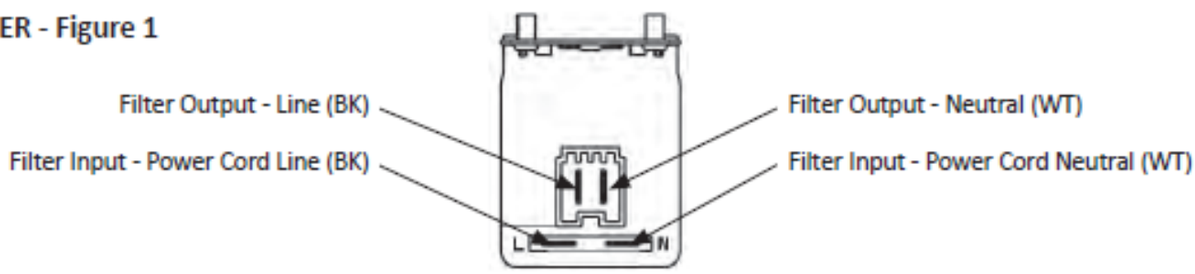
J5 Door Lock	
Pin	Wire Color
1	Yellow
2	Red
3	Brown

J9 Fan	
Pin	Wire Color
1	Brown
2	Brown

J6 Drain Pump	
Pin	Wire Color
1	Blue
2	Blue
3	N/A
4	N/A

J7 Valves	
Pin	Wire Color
1	N/A
2	Blue
3	Pink
4	Red
5	White
6	Red

RFI FILTER - Figure 1



TEST #2: HUMAN-MACHINE INTERFACE (HMI)

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test is performed when any of the following situations occurs during the Human-Machine Interface (HMI) Test:

None of the indicators or display turn on, some buttons do not light indicators, no beep sound is heard, or none of the indicators or display turn on:

1. Unplug washer or disconnect power.
2. Remove the top panel to access the ACU.
3. Visually check that all ACU connectors are inserted all the way into the ACU.
4. Remove console assembly. Do not pull on the wires between the console and ACU.
5. Visually check that all HMI connectors are inserted all the way into the HMI.
6. Visually check that the HMI and housing assembly is properly inserted into the front console.
7. If all visual checks pass, perform TEST #1: ACU Power Check to verify supply voltage and health of Microcontroller. If supply voltages are present and microcontroller is functioning properly, replace the HMI and housing assembly. If supply voltages are not present and Service LED is off or blinking constantly, replace the ACU.
8. Reassemble all parts and panels.
9. Plug in washer or reconnect power.

10. Perform the "Human-Machine Interface (HMI) Test" to verify repair.

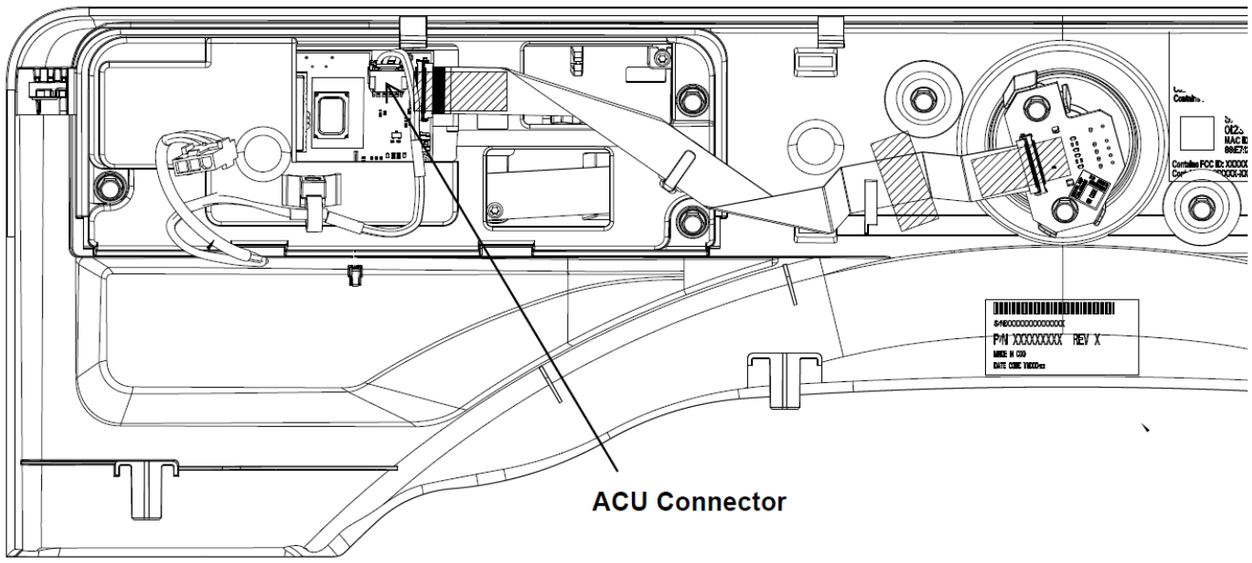
Some buttons do not light indicators:

1. Unplug washer or disconnect power.
2. Remove the top panel to access the ACU and Human-Machine Interface (HMI).
3. Visually check that the HMI and housing assembly is properly inserted into the front console.
4. If visual check passes, replace the HMI and housing assembly.
5. Reassemble all parts and panels.
6. Plug in washer or reconnect power.
7. Perform the "Human-Machine Interface (HMI) Test" to verify repair.

No beep sound is heard:

NOTE: Some washers may have a feature to turn off the button sounds that the user may have activated. Refer to the "Use and Care Guide" for that model to restore beep sounds (if applicable). If no beep sound persists, follow these steps:

1. Unplug washer or disconnect power.
2. Remove the top panel to access the ACU.
3. Visually check that all ACU connectors are inserted all the way into the ACU.
4. Remove console assembly. Do not pull on the wires between the console and ACU.
5. Visually check that all HMI connectors are inserted all the way into the HMI.
6. If all visual checks pass, replace the HMI and housing assembly.
7. Perform the "Human-Machine Interface (HMI) Test" to verify repair.



TEST #3: MOTOR CIRCUIT

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

NOTE: This test checks the motor, appliance control unit (ACU), and wiring.

1. Check the motor and electrical connections by performing the "Diagnostic Cycle". The following steps assume that this step was unsuccessful.
2. Unplug washer or disconnect power.
3. Check to see if basket will turn freely. If basket turns freely, go to step 4. If basket does not turn freely, determine what is causing the mechanical friction or lockup.
4. Remove the top to access the ACU.
5. Perform TEST #1: ACU Power Check then visually check

that connector J1 is inserted all the way into the ACU. If visual checks pass, go to step 6. If visual checks fail, reconnect J1 and repeat step 1.

6. Check the motor windings. Disconnect the motor harness from the ACU. With an ohmmeter, verify the resistance values as shown below:

Stator	
Motor Harness	**Windings**
J2, Pins 1 & 2	13.5 - 14.9
J2, Pins 2 & 3	13.5 - 14.9
J2, Pins 1 & 3	13.5 - 14.9

If the values are outside the range or open, replace stator assembly; otherwise, reconnect the motor harness and go to step 7.

7. Plug in washer or reconnect power.
8. Perform the “Diagnostic Cycle” to verify repair. If motor is not moving replace the ACU.
9. Unplug washer or disconnect power.
10. Reassemble all parts and panels.
11. Perform the “Diagnostic Cycle” to verify repair. If motor is not moving replace the ACU.

TEST #4: DOOR LOCK SYSTEM

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Check the relays and electrical connections to the door lock by performing the "Diagnostic Cycle". The following steps assume that this step was unsuccessful.

1. Check door lock mechanism for obstruction or binding. Repair as necessary.
2. Unplug washer or disconnect power.
3. Remove top panel to access machine electronics.
4. Visually check that the J5 (door lock assembly) connector is inserted all the way into the ACU. Refer to ACU diagram. If visual check passes, go to step 5. If the connector is not inserted properly, reconnect and retest door lock.
5. Disconnect the J5 connector from the ACU. NOTE: To measure the door lock switch in the "locked" position, plug in washer or reconnect power. Press the POWER button, select any cycle, and then press START. Actuation of the door lock solenoid should be heard after a few seconds. At that point, unplug the washer and disconnect J5 from the ACU and measure resistance across pins (ACU side) according to the following chart.

Component	Resistance	Contacts Measured	
Door Switch	Door Open = Open Circuit Door Closed = 60-90 ohms	J5-2	J5-3
Lock Switch	Locked = 0 ohms Unlocked = Open Circuit	J5-1	J5-2
Lock Solenoid	60-90 ohms with door closed	J5-2	J5-3

If resistance values are good, go to step 6.

If any of the measurements are out of range, check the harness of the suspected component between the ACU and door lock mechanism for continuity. If the harness and connections are good, replace the door lock mechanism. IMPORTANT: To minimize risk of damage to door lock/switch wires, remove the door lock mechanism screws before

removing the front panel.

6. If the preceding steps did not correct the lock problem, replace the ACU and retest door lock mechanism.
7. Unplug washer or disconnect power.
8. Replace the ACU.
9. Reassemble all parts and panels.
10. Perform the “Diagnostic Cycle”.

TEST #5: DRUM LIGHT (SOME MODELS)

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Theory of Operation: The drum light is activated by the ACU. When the ACU detects the door-switch transition from closed to open, the ACU will automatically turn on the light within 1 second. When the door-switch transitions from open to closed, the ACU will automatically turn off the light within 1 second. The software will turn off the drum light if the washer status changes from “Programming Mode” to “Standby Mode.” The software will turn off the drum light after being on for 5 minutes when the door is opened during “Pause Mode” whether the door is closed or not. This test is performed if the drum LED does not light.

1. Unplug washer or disconnect power.
2. Remove the top panel to access ACU.
3. Verify the drum light connector J12 is securely connected to the ACU.
4. Check harness and connections between the drum light

and the ACU. If the connections are OK, go to step 5. If not, repair or replace as needed.

5. Unplug the drum light from the harness that goes into the ACU.
6. Plug in washer or reconnect power.
7. With a voltmeter set to VDC, measure the voltage across J12, pins 1 and 2. If the drum LED driver is working properly, you should measure 2.9-3.5 VDC.If the voltage is present, replace the drum LED. If the voltage is not present, replace the ACU.
8. Unplug washer or disconnect power.
9. Reassemble all parts and panels.

TEST #6: WATER INLET VALVES

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test checks the electrical connections to the valves and the valves themselves. Water valve names and locations are as follows:

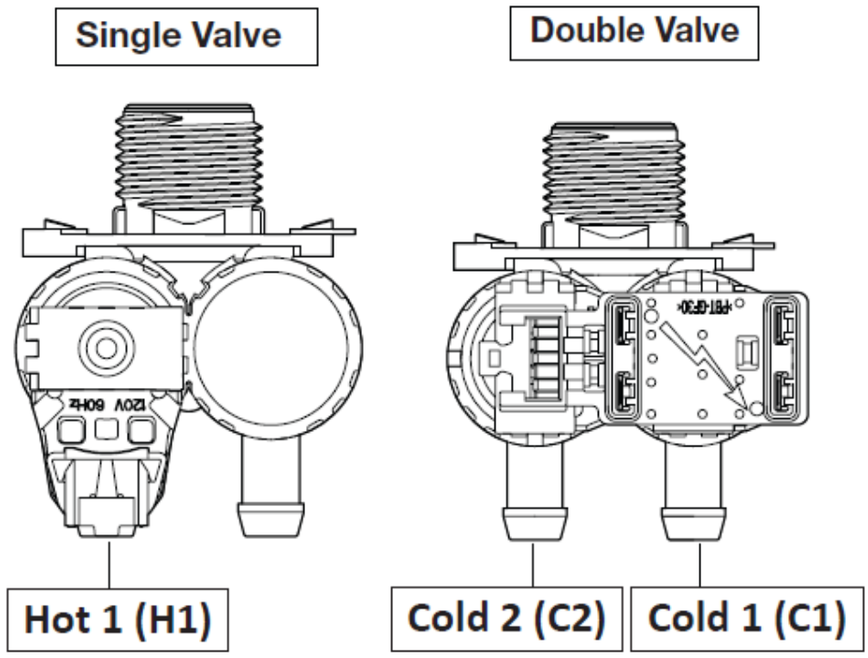


Figure 1 - Single & Double Water Inlet Valves

1. Check the relays and electrical connections to the valves by performing the "Diagnostic Cycle". The following steps assume that this step was unsuccessful.
2. For the valve(s) in question, check the individual solenoid coils:

Unplug washer or disconnect power.

- Remove top panel to access machine electronics.
- Remove connector J7 from the ACU. Refer to ACU diagram.
- Check harness connections to the solenoid valves. Verify continuity in harness between ACU and solenoid valves.

3. Check valve coil resistance at the valves, or across the following connector pinouts:

- Resistance should be 1.1 - 1.35k Ω.
- If resistance readings are outside the range or open, replace the valve assembly. If resistance readings are within range, reconnect J7 to ACU. Go to step 4.

4. Plug in washer or reconnect power.
5. With a voltmeter set to AC, attach the leads across the pins of the suspect valve. Run the "Load Test". Step

3=cold 1 valve, Step 4=cold 2 valve, Step 5=hot valve..

6. If line voltage is present and valve still does not activate, replace valve assembly.
7. If line voltage is not present, replace the ACU.
8. Unplug washer or disconnect power.
9. Reassemble all parts and panels.
10. Perform the “Diagnostic Cycle”.

TEST #7: WATER LEVEL SENSOR

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test checks the water level sensor, ACU, and wiring.

NOTE: Usually, if the water level sensor malfunctions, the washer will generate a long fill or long drain error.

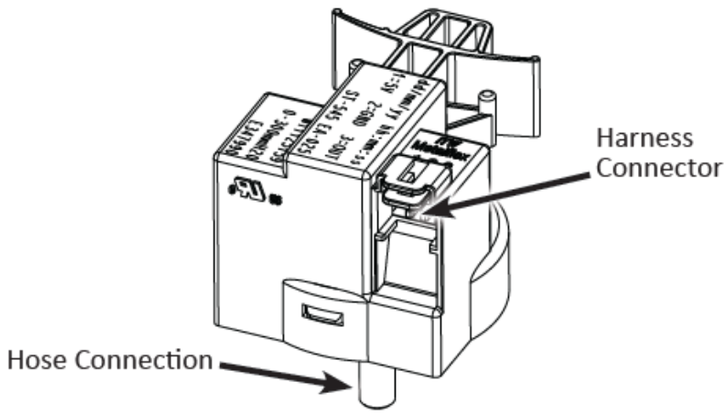


Figure 1 - Water Level Switch

1. Check the functionality of the water level sensor by running a small load cycle. The valves should turn off automatically after sensing the correct water level inthe tub. The following steps assume that this step was

unsuccessful.

2. Press START/PAUSE to pause the cycle and then press POWER. The cycle will cancel and drain the water from the tub.
3. Unplug washer or disconnect power.
4. Remove top and rear panels to access tub, air trap, and pressure hose connections. Water level sensor is located at top center of right cabinet panel.
5. Check connections from tub to air trap, air trap to pressure hose, and pressure hose to water level sensor.
6. Check to ensure hose is routed correctly in the lower cabinet and not pinched or crimped.
7. Verify there is no water, suds, or debris in the hose or air trap. Disconnect hose from water level sensor and blow into hose to clear water, suds, or debris.
8. Check hose for leaks. Replace if needed.
9. Visually check that connector J11 is inserted all the way into the ACU. Also check that the water level sensor harness is securely connected to the sensor.
10. Check the harness between the ACU and water level sensor for continuity. If there is continuity, go to step 11.
11. If there is no continuity, repair or replace as necessary.
12. Plug in washer or reconnect power.
13. With a voltmeter set to DC, connect black probe to ACU connector J11, pin 2 (GND) and red probe to J11, pin 3 (+5V [Vcc]). If +5 VDC is present, replace the water level sensor. (Before replacing the sensor, make sure that there is NO water remaining in the tub or there will not be an accurate water level measurement and an error code may appear. Drain the tub by running a drain & spin cycle with the sensor plugged into J11 but with the hose removed). If+5 VDC is not present, perform TEST #1: ACU Power check.
14. If the preceding steps did not correct the problem, replace the ACU.

TEST #8: DRAIN PUMP

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Perform the following checks if washer does not drain.

1. Check for obstructions in the usual areas. Clean and then perform step 2.
2. Check the Drain Pump Pump and electrical connections by performing the "Diagnostic Cycle". The following steps assume that this step was unsuccessful.
3. Unplug washer or disconnect power.
4. Remove top panel to access machine electronics.
5. Visually check that the J6 connector is inserted all the way into the ACU. If visual check passes, go to step 6.
6. If connector is not inserted properly, reconnect J6 and repeat step 2.
7. Remove connector J11 from the ACU. With an ohmmeter, measure the resistance across connector pins.

Motor	ACU Pins	Resistance
Drain Pump	J6-1 to J6-2	18.5 - 21.5 Ω

Resistance should be within range at room temperature. If the reading is infinite (open), go to step 8. If the reading is correct, go to step 10.

8. Verify that pump, drain hose, pressure switch hose are free from obstructions. Visually check the electrical connections at the Drain Pump. If visual check passes, go to step 9. If connections are loose, reconnect the electrical connections and repeat step 2.
9. With an ohmmeter, check harness for continuity between

the Drain Pump and ACU. If there is continuity, go to step 11. If there is no continuity, replace the lower machine harness and repeat step 2.

10. With an ohmmeter, measure the resistance across the two pump terminals using the chart in step 6. If the reading is infinite (open), replace the drain pump. If the reading is correct, go to step 11.
11. If the preceding steps did not correct the drain problem, replace the ACU.

TEST #9: WASH HEATING ELEMENT

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test checks the heating element, wiring, and ACU.

1. Unplug washer or disconnect power.
2. Remove top panel to access machine electronics.
3. Disconnect connector J3 from the ACU. Refer to ACU diagram.
4. Using an ohmmeter, measure the resistance across pins 1 and 2 of connector J3. If the resistance is 7-30 Ω, the heating element and wiring are good; go to step 8. If the resistance is open, go to step 5.
5. Remove back panel to access the heating element.
6. Disconnect the wire connectors from the heating element.
7. Using an ohmmeter, measure the resistance across the two heating element terminals. If the resistance is 7-30 Ω, the heating element is good; replace the lower main

harness. If the resistance is open, replace the heating element.

8. If the preceding steps did not correct the heating element problem, replace the ACU.

TEST #10: WASH TEMPERATURE SENSOR

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test checks the temperature sensor, wiring, and ACU.

1. Unplug washer or disconnect power.
2. Remove top panel to access machine electronics.
3. Disconnect connector J11 from the ACU. Refer to ACU diagram.

4. Using an ohmmeter, measure the resistance across pins 1 and 3 of wash temperature sensor connector J11. Refer to the following chart.

THERMISTOR SENSOR RESISTANCE		
Approximate Temperature		Approximate Resistance
F°	C°	(KOhms)
-4	-20	197.3
14	-10	111.6
32	0	65.5
59	15	31.4
77	25	20.0
86	30	16.1
104	40	10.6
122	50	7.1
140	60	4.8
158	70	3.4
176	80	2.4
194	90	1.8
212	100	1.3
248	120	0.7
302	150	0.3

5. If the resistance is within the specified range, go to step 8. If the resistance is infinite or close to zero, go to step 6.
6. Remove the back panel to access the temperature sensor.
7. Disconnect the wash temperature sensor connector from the heating element bracket. See Figure 1.
8. Using an ohmmeter, measure the resistance across pins of the temperature sensor (on the heating element bracket).

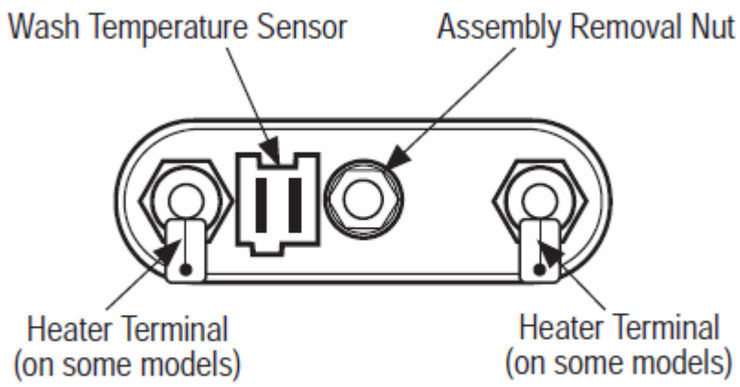


Figure 1 - Wash Temperature Sensor

If the resistance is within the specified range, the sensor is good; replace the lower main harness. If the resistance is open, replace the wash temperature sensor. If the preceding steps did not correct the wash temperature sensor problem, replace the ACU.

TEST #11: SINGLE DOSE DISPENSER

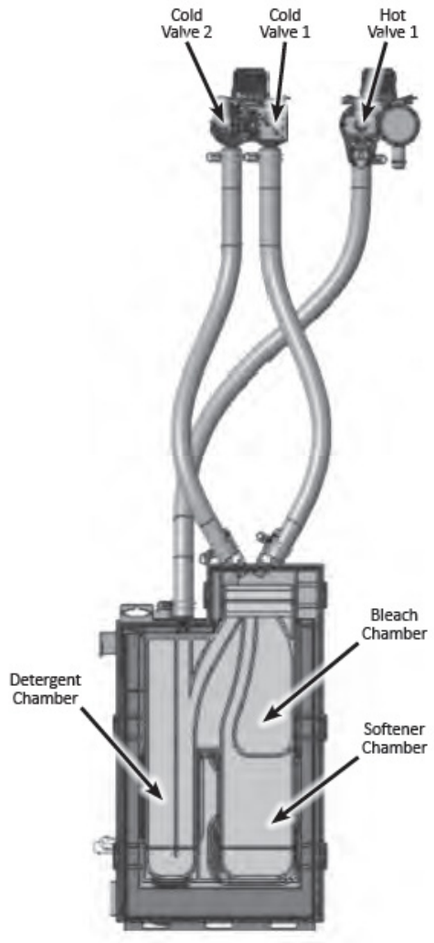


Figure 1 - Dispenser System, Valves & Chambers

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Perform the following checks if the washer will not dispense detergent, bleach, or fabric softener.

1. Check water supply to washer. Check water hose connections to and inside the washer.
2. Verify that dispenser drawer is not clogged with detergent.
3. Unplug washer or disconnect power.
4. Remove the top panel to access the machine electronics.
5. Verify that all valves are working through TEST #6. See TEST #6 for valve descriptions. The water is dispensed as follows:

Detergent Dispenser: Through valves Cold 1 and Hot 1 (hot and cold water).

Bleach: Through valve Cold 2 (only cold water)

Fabric Softener: Through valves Cold 1 and Cold 2. Both valves need to be functioning for water to be dispensed through this chamber.

6. If the diagnostic test shows that the valves are functioning and a problem persists, replace the dispensing system.

NOTE: There may be some water left in the bleach dispenser during any cold water dispensing in the system due to splash.

TEST #12: VENT FAN MOTOR

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

This test is performed if the vent fan does not activate.

1. Check rear vent for obstruction that could prevent the fan

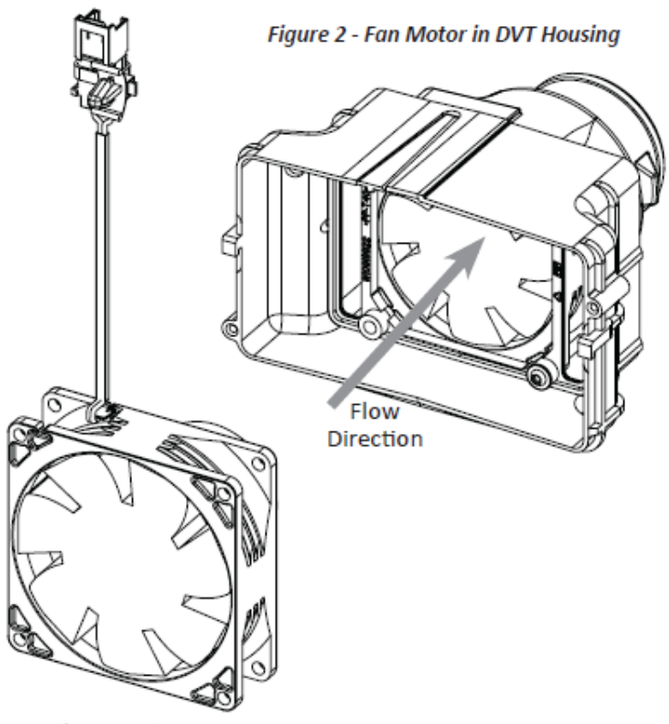


Figure 2 - Fan Motor in DVT Housing

Figure 1 - Fan Motor

   from spinning. If none, go to step 2.
2. Unplug washer or disconnect power.
3. Remove the top panel to access the machine electronics.
4. Visually check that connector J9 is inserted all the way into the ACU. Also check that the vent fan harness is securely connected to the fan. If visual check passes, go to step 5. If connector is not inserted properly, reconnect J9 and repeat step 2.
5. With an ohmmeter, check harness for continuity between

the vent fan and the ACU. If there is continuity, go to step 6. If there is no continuity, replace the upper machine harness and repeat step 2.

6. With an ohmmeter, measure the resistance across the two fan terminals. Resistance should be <10 MΩ.
7. If the resistance is far out of range or open, replace the vent fan assembly.
8. If the resistance is in the correct range, go to step 9.
9. If the preceding steps did not correct the problem, replace the ACU.

PRODUCT SPECIFICATIONS & WARRANTY INFORMATION SOURCES

IN THE UNITED STATES:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL:

FOR WHIRLPOOL PRODUCTS: 1-800-253-1301

FOR TECHNICAL ASSISTANCE WHILE AT THE CUSTOMER'S HOME CALL:

THE TECHNICAL ASSISTANCE LINE: 1-800-832-7174

HAVE YOUR STORE NUMBER READY TO IDENTIFY YOU AS AN AUTHORIZED IN-HOME SERVICE PROFESSIONAL

FOR LITERATURE ORDERS (CUSTOMER EXPERIENCE CENTER):

PHONE: 1-800-851-4605

FOR TECHNICAL INFORMATION AND SERVICE POINTERS:

www.servicematters.com

IN CANADA:

FOR PRODUCT SPECIFICATIONS AND WARRANTY INFORMATION CALL

1-800-461-5681

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